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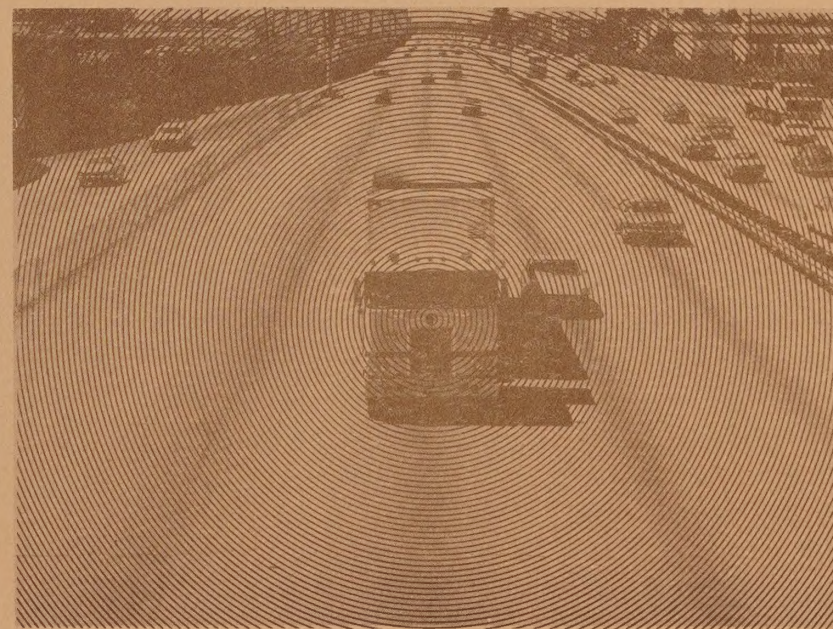


ENVIRONMENTAL RESOURCES
MANAGEMENT ELEMENT

SAN MATEO, CALIFORNIA

CITY

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ENVIRONMENTAL RESOURCES MANAGEMENT ELEMENT
OF THE
SAN MATEO GENERAL PLAN

CITY OF SAN MATEO

DEPARTMENT OF COMMUNITY DEVELOPMENT

DECEMBER 2, 1974

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The Use of ERME

The Environmental Resource Management Element (ERME) is adopted as a single element of the General Plan of the City of San Mateo. It is organized in four major segments:

- 1) Goals and Policies
- 2) Resources Report
- 3) Action Program
- 4) Technical Supplement

The four segments may be used in conjunction, or they may be used separately, depending on the level of detail and emphasis the reader desires.

The Goals and Policies report summarizes the objectives the City wishes to achieve in terms of goals, policies and more specific implementing policies. The goals and policies are derived from the directive of State law, an analysis of environmental resources and constraints, and an evaluation of what the City will be able to accomplish.

The Resources Report identifies and describes significant environmental resources and constraints. The problems and issues are discussed; possible solutions are posed, but they do not represent City policy. The three major sections of the report include:

- Natural resources - trees and natural vegetation
 - air quality
 - water resources
 - wildlife
 - topography

- Urban Resources - scenic highways
 - historical/cultural factors
 - urban form

Urban Development

- Constraints
 - seismic safety
 - structural hazards
 - noise
 - general safety
 - energy conservation

The Action Program is a summary and brief description of the actions proposed as a result of the ERME analysis. Proposed actions fall in six categories--code additions, code revisions, planning studies, review procedures, direct action programs, and contingency plans. This action program describes the City's work program to realize goals and policies.

The Technical Supplement includes background information which was used in the preparation of the Resources Report. It presents many references from other sources--sound standards, street tree lists, State law and others.

In each report the reader is directed to the table of contents for the specifics contained within. While each report may stand alone, they represent but a portion of the adopted element.

Purpose

This Environmental Resource Management Element is prepared in response to State requirements for General Plan elements and the City's desire for an environment of high quality and safety for its citizens. Six required elements are included in this document, for reasons explained below, in accordance with requirements of the State of California Government Code as follows:

Section 65302(d) - Conservation Element

Section 65302(e) and 65560 et seq. - Open Space
Element

Section 65302(f) - Seismic Safety Element

Section 65302(g) - Noise Element

Section 65302.1 - Safety Element

Section 65302(h) - Scenic Highways Element

Approach

The Council on Intergovernmental Relations (CIR) was charged by the legislature with developing guidelines for all General Plan elements. Cognizant of the proliferation of General Plan elements (there are nine), CIR suggested that the General Plan logically falls in three major categories and could be organized along those lines into a Transportation Element, Community Development Element, and an Environmental Resource Management Element.

San Mateo's ERME is prepared in response to this recommendation for consolidation since each of the six elements contained within the pages speaks to natural

and/or man-made resources or hazards. This grouping avoids excessive duplication and cross references and presents a more comprehensive overview of the City's environmental setting.

Six elements of the complexity of those contained in this ERME present the reader with a potentially overwhelming flow of information. To allow for selective review, or review on different levels of detail, the Element has been arranged in the aforementioned four segments.

Relationship to Adopted Open Space and Conservation Element

The Open Space and Conservation Element was adopted in 1973. ERME is intended to expand and amplify the discussion on topics contained within the Open Space and Conservation Element. While both documents contain the same or similar discussion on many subjects, the ERME takes precedent if a question of conflicting statements should arise.

The Open Space and Conservation Element defines and discusses nine categories of open space: first, City parks and recreation facilities; second, other public and utility lands and potential private open space facilities (such as private schools and private parks); third, privately held land; fourth, land subject to redevelopment; fifth, waterways; sixth, historic areas; seventh, scenic highways; eighth, specific areas of community impact; and ninth, public rights-of-way. The ERME deals with all of these nine categories of land:

1) City parks and recreation facilities. The Open Space and Conservation Element notes that this category of land is the principal subject of the Parks and Recreation Element. ERME updates statistics and notes park space deficiencies (Urban Form, 2-35)

2) Other public and utility lands and potential private open space facilities. The Open Space and Conservation Element places these lands in much the same category as 1) above. ERME does similarly. (Urban Form, 2-35)

3) Private vacant land. The Open Space and Conservation Element highlights 17 large vacant sites and gives a preliminary indication of the presence of up to six significant factors for evaluating open space value. ERME is structured to apply significant environmental factors to any vacant site, including the 17.

4) Land subject to redevelopment. The Open Space and Conservation Element points out that redevelopment may adversely affect surrounding properties. The ERME echoes this and recommends mitigating measures. (Trees and Natural Vegetation, 2-1 Scenic Highways, 2-22, Historic and Cultural 2-26, Urban Form, 2-35)

5) Waterways. ERME duplicates this aspect of the Open Space and Conservation Element in the section entitled "water resources" (Page 2-8)

6) Historic Areas. This Open Space and Conservation Element subject is found in the "Historic and Cultural" section. (Page 2-26)

7) Scenic Highways. ERME copies this Open Space and Conservation Element topic in the section entitled "scenic highways". (Page 2-22)

8) Specific areas of community impact. The Open Space and Conservation Element indicates that urban open space should be a factor in planning of certain geographic areas of the City. The ERME does this, generally, in the Urban Form section. (Page 2-35)

9) Public rights-of-way. This Open Space and Conservation Element subject is addressed in the ERME in the section entitled "Trees and Natural Vegetation" and also the scenic highways and urban form sections. (Pages 2-1, 2-22, 2-35)

The main difference between ERME and the Open Space and Conservation Element is that the latter tends to discuss issues relating to areas, while the former discusses the same issues, and more, in general terms. The Open Space and Conservation Element does not set forth parcels as future open space lands; in fact, the Element states that "it would be unrealistic to say that this Open Space Element should rely on acquisition as a major implementation method. The premise of this Element must be that money available for park, recreation, and open space purposes will for the most part be allocated to the purchase of land designated in

the Parks and Recreation Element, and that the Open Space Element must largely rely on alternative methods to fulfill its purpose." ERME, by reference to such significant factors as slopes, seismic safety, waterways, historic sites, etc., establishes the alternative methods.

Relationship of ERME to Other General Plan Elements

ERME is part of the San Mateo General Plan and relies on other elements to "round out" certain subject matters. The Parks and Recreation Element in particular touches and expands upon a number of ERME topics. Other elements must reflect their particular relationship to ERME. The Environmental Resource Management Element is unique in the sense that it discusses and evaluates environmental factors more so than development factors. The Housing and Land Use Element must reflect these findings on environmental factors in discussing location and intensity of residential and non-residential development. The Circulation Element must reflect findings concerning streets and urban form and others. The Public Buildings and Facilities Element must take into account environmental policies of the ERME in setting forth the extent and type of needed public improvements.

ERME is furthermore intended to be consistent with other plans affecting San Mateo. Regional agencies with plans affecting San Mateo are the Association of Bay Area Governments (ABAG) and the Bay Conservation and Development Commission (BCDC).

San Mateo County plans also affect San Mateo. Many of the ERME subject matters are area-wide concerns and

should be addressed in a consistent fashion by different jurisdictions. This is particularly true of scenic highways, an area in which compatibility with County proposals was in prime concern.

ERME Relationship To State-required Elements

Table 1 on page v reveals its relationship to the six required elements--open space, conservation, noise, safety, seismic safety and scenic highways. It indicates which specific subjects of the ERME address which one or which several of these elements. It also points out that the required content of the different elements is paralleled very closely by the content of the ERME. An analysis of the contents of the six elements indicates that they fall generally in one of the three categories into which the ERME has been divided--natural resources, urban resources, and urban development constraints.

The first category identifies, describes, and delineates natural resources within San Mateo. They include trees and natural vegetation, especially those within the Heritage Tree class; air quality; waterways, such as creeks, drainage channels, the Bay, lagoons, etc.; wildlife; and topographic characteristics.

The second area will identify, describe, and delineate the environmental resources of an urban setting. These urban amenities include scenic highways--streets that traverse areas of urban and natural beauty, and the corridor in which they are

ENVIRONMENTALLY RELATED
ELEMENTS
CONSOLIDATION MATRIX

ERME

MANDATORY ELEMENTS

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located; sites of historical and cultural significance; and features of urban form, such as parks, open space, and urban design.

The last area, urban development constraints, identifies, describes, and delineates existing and potential constraints and hazards to development and to existing buildings and structures. These constraints include seismic safety, dealing with geological and structural hazards; noise; general safety; and energy conservation.

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I. INTRODUCTION

PURPOSE

This Goals and Policies Report is the first of a series of four which comprise the Environmental Resource Management Element (ERME) of the City of San Mateo General Plan. The second is the Resources Report which describes a variety of environmental factors and discusses related problems. The third report is the Action Program which summarizes and briefly describes the actions proposed as a result of the ERME analysis. The fourth report is the Technical Supplement which details background and reference material used in preparing the element.

The goals and policies contained within this report summarize the City's basic objectives to be achieved, expressed as general goals. In addition, policies to achieve these goals are set forth. The policies result from the direction given by State law, an analysis of environmental resources and constraints, and an evaluation of what the City will be able to accomplish.

II. GOALS AND POLICIES

GOALS

1. To provide for the preservation and conservation of natural resources and open space in and around the City of San Mateo.
2. To maintain and enhance those community qualities which create a pleasing and safe environment.
3. To protect the public's health, safety and welfare from all types of community-wide hazards.

NATURAL RESOURCES POLICIES

1. Establish guidelines which will allow development while preserving significant trees and other natural vegetation.
2. Cooperate with regional agencies to develop measures which will maintain and improve the air quality in the San Francisco Bay airshed.
3. Implement the in-lieu parking program to strengthen the local transit system, and reduce air pollution.
4. Improve the quality of San Mateo's water resources by upgrading the water quality and bodies of water over which the City has control, and require private development adjacent to water to provide public access.
5. Develop the potential of Marina Lagoon to serve as a recreation facility, wildlife area, and drainage basin.
6. Upgrade wastewater treatment facilities to improve the quality of receiving waters and allow for reuse of wastewater.
7. Look upon drainage channels as potential recreation and scenic resources and require improvement to take multiple use into account.

8. Maintain development patterns which allow for the continued existence and viability of wildlife.
9. Explore the feasibility of preserving the few remaining wildlife habitats.
10. Limit grading of slopes over 25% for safety and site protection reasons.
11. Maintain the character of the natural topography of the western hills.

URBAN RESOURCES POLICIES

1. Designate streets of significant scenic value as scenic highways and develop programs which will maintain or enhance that scenic quality.
2. Designate scenic corridors and establish regulations to maintain the quality of scenic roads.
3. Encourage the conservation of historical, architectural, and cultural resources.
4. Develop regulations which will encourage developments to provide necessary factors for a satisfactory existence; including safety, privacy, and open space.
5. Develop a comprehensive right-of-way policy which outlines street tree planting priorities, criteria for street widening, and general enhancement of streets.

6. Reexamine and revise open space requirements in the R3 district; establish a design manual for development in the R5 district; develop design criteria for planned developments; examine the bonus features of the Executive Zone; and reexamine and revise necessary buffer and transition criteria for various zones.
7. Develop criteria for redevelopment of land to preserve existing vegetation, to promote harmonious development, and to prevent overloading of City facilities.
8. Classify public and semipublic lands into the Open Space Zone, as appropriate, to indicate the permanent open space nature of such lands.
9. Continually review significant private vacant sites, such as the 17 identified in the Open Space and Conservation Element, to determine which portions should remain as open space.
10. Effect the goals of the Parks and Recreation Element and those of ERME.
11. Acquire and develop open space areas delineated in the Parks and Recreation Element, with emphasis on sites with significant environmental qualities.

12. Develop specific plans for areas of significant community importance, such as the downtown area, El Camino Real, and Twenty-fifth Avenue.

URBAN DEVELOPMENT CONSTRAINTS POLICIES

1. Develop programs to reduce the risk to human life and property resulting from seismic hazards.
2. Obtain a definitive report from responsible agencies concerning the Crystal Springs Dam response to seismic activity.
3. Develop a dangerous building code and inspection program to correct unsafe structural conditions.
4. Develop a parapet ordinance and inspection program to eliminate hazardous parapet and building appendages conditions.
5. Promptly adopt Uniform Building Code amendments which provide for up-to-date building safety standards.
6. Develop measures to maintain adequately low levels of noise in the various sections of the community.
7. Develop measures which will reduce the risk to human life and property resulting from flooding.

8. Diligently pursue the reconstruction of the Bayfront Dike.
9. Investigate likely soil and geologic problems in land developments.
10. Maintain an up-to-date emergency/contingency plan and keep it effective by periodic training exercises and by obtaining necessary equipment.
11. Inform the public about major community hazards and advise on steps to take in the event of emergencies.
12. Study ways in which energy conservation measures might be implemented through City decisions.

GENERAL IMPLEMENTING POLICIES

1. Develop neighborhood or area EIRs.
2. Make findings on whether developments are consistent with, neutral to, or in conflict with the General Plan.



RESOURCES

REPORT

I. INTRODUCTION

PURPOSE

This Resources Report is the second of a series of four documents which comprise the Environmental Resources Management Element of the General Plan of the City of San Mateo. The first report, entitled Goals and Policies, sets forth environmental policies of the City. The third report is the Action Program and the fourth report is the Technical Supplement which details background and reference material used in preparing the element. The ERME is San Mateo's response to State requirements for six General Plan elements - Noise, Safety, Seismic Safety, Scenic Highways, Open Space and Conservation. The State-prepared guidelines for general plan elements reflect the appropriateness of combining elements with similar subject matters.

An analysis of the contents of the six elements indicates that they fall generally in one of the three categories into which the ERME has been divided--natural resources, urban resources, and urban development constraints. This Resources Report contains the discussion and evaluation of factors in these three categories. Possible alternative solutions to problems are posed for consideration but do not reflect City policy.

II. NATURAL RESOURCES

1. TREES AND NATURAL VEGETATION

A. Background

Natural vegetation in San Mateo can be classified into two main groups: riparian (streamside) woodland and oak woodland. The riparian woodland is characterized most by the presence of native California Bay Laurel. Willows are also prevalent in the areas alongside streams. Six species of willows are indigenous to this area; the most common being the shrublike Arroyo Willow. Growing alongside the willows is the Big Leaf Maple. This tree has some of the largest leaves of any common local plant. Several species of ash, including the Oregon Ash found in the watershed area, are common. Stands of native California Buckeye and Laurel remain in a few places. Poplars and elderberries are also found along the streams throughout the City.

The oak woodlands are found in areas with lower water content in the soil. These areas are characterized by spreading broadleaf trees such as the Buckeyes, Live Oaks, Black Oaks and Blue Oaks. The California Black Oak, one of the prettiest oaks growing in California, serves as a microhabitat for numerous animals such as gray squirrels, raccoons and woodpeckers. The Coast Live Oak, probably the most commonly found oaks on the

Peninsula, is San Mateo's official tree and is shown on the City's seal.

The era of the great estates had a profound influence on San Mateo's horticultural environment. Plants and trees were brought from throughout the world to enhance the estate gardens. Most prevalent of the imported vegetation was the Eucalyptus. Upon the advice of botanists and horticulturists, Eucalypti were imported from Australia and planted to provide protection for slower growing elms, locusts and walnuts. When the estates were subdivided in the process of urbanization, the majority of the formal gardens were destroyed. Today many eucalyptus trees remain while much of the other vegetation has virtually disappeared.

B. Existing conditions

Vegetation is one of the most important components of the City's natural landscape. The values of the natural landscape may be classified as aesthetic, scientific, educational, recreational, and functional. In considering the aesthetic values of the landscape, the chief values lie in beauty which has not been altered by man. As San Mateo becomes more urban, the need for conservation of natural vegetation increases. Mature trees and shrubs introduce some relief to the man-made environment. They serve an important function in the oxygen-carbon dioxide exchange and as natural erosion-control agents. They also act as noise absorbers and wind breaks, enhancing air quality, moderating temperatures, and adding to property values.

1. Heritage trees. Over-intensive development resulted in the up-rooting of numerous trees, which in turn produced negative environmental effects. In addition to poor air quality, irritating winds, and deteriorating visual amenity, the removal of remaining major trees is a threat to the heritage of the City (see Figure 1). In December, 1968, San Mateo adopted a Heritage Tree Ordinance to preserve the remaining major trees as living landmarks which tie the City to its past.

2. Public landscaping resources. The City of San Mateo currently possesses approximately 204 acres of park land. This acreage is developed in a number of ways. Vegetation, both type and amount, varies from park to park. Native vegetation, such as California Buckeye, Laurel, and Coast Live Oak and vegetation which has adapted well to the area, such as the eucalyptus, are frequently found in the City parks. Central Park contains stately pines, oaks, cedars, and redwoods which were part of the Kohl Estate. At Coyote Point can be found eucalyptus, pine, and cypress planted by the Howard family.

3. Non-parks. Public non-park areas are also of importance to the City scene in forms of vegetation. City Hall, the several libraries, fire stations, the numerous schools, and other public buildings and facilities all receive careful landscape treatment. Scattered throughout the City these public places are visually pleasing and aid in linking the facilities with the areas,

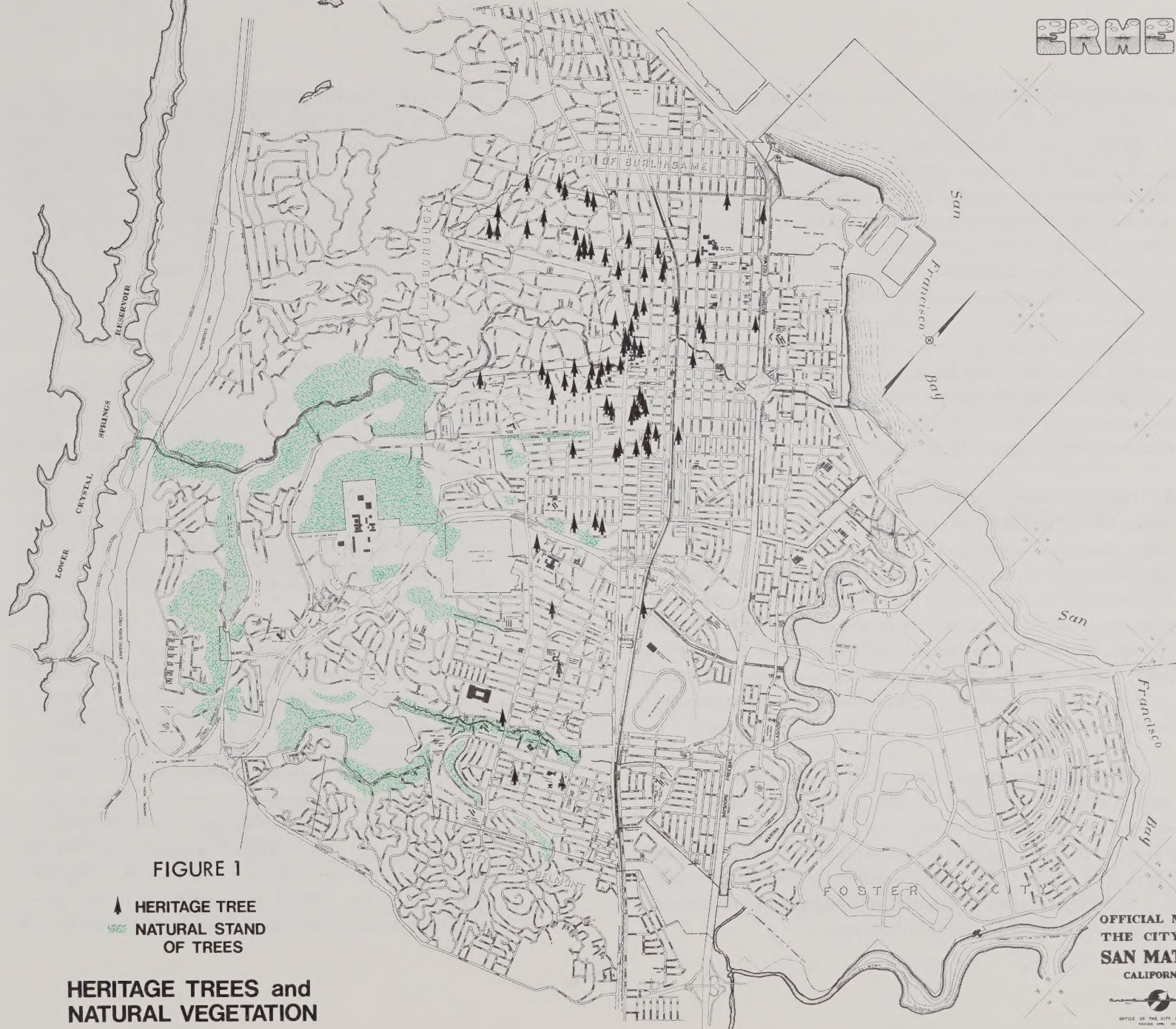


FIGURE 1

- ▲ HERITAGE TREE
- NATURAL STAND OF TREES

HERITAGE TREES and NATURAL VEGETATION

OFFICIAL MAP
THE CITY OF
SAN MATEO
CALIFORNIA

predominately residential, in which they are found.

4. Street trees. Among many factors affecting the open space value of a street, perhaps none is more important than street trees. Some 35,000 street trees line San Mateo streets. Each street has a designated street tree type. Both the City and property owners have a long-term commitment to plant and adequately maintain a substantial number of trees with priorities given to areas known to be deficient in vegetation. Street trees are important determinants of street quality. They provide shade, help control noise, and reduce winds. Such benefits affect significantly the character and quality of neighborhoods. Areas abundant in vegetation are valued higher than those which are sparsely planted.

5. Islands, ovals, median strips. Closely related to the street trees are the approximately 250 planted islands, ovals, and median strips consisting of some 20 acres. San Mateo Park, Baywood, and several other districts derive much of their value from these planted areas. In some sections of the City, trees are predominate on the islands, while in other areas small shrubs are more prevalent. The vegetation on these islands, ovals, and median strips provides visual amenities and helps support several forms of wildlife.

6. Private landscaping resources. A good deal of the character of San Mateo depends on private properties. Many City residents are conscious of environmental values and this awareness is reflected in well-maintained lawns and yards. Numerous private landscapes throughout the City support a potpurri of vegetation and provide a pleasing respite from the urban scene.

Recent residential, executive, and commercial developments in the City have also made an effort to increase open space areas and incorporate amenities. Plazas and arcades, with diverse plantings and occasional fountains and other forms of usable open space are prevalent. Trees and other types of vegetation are being used in significant ways to balance the manmade urban form.

C. Problems and issues

The special properties of soil, air, and sunlight are gathered and organized by plants, each in its different way, and each because of adaption to a unique set of environmental circumstances. Vegetation creates and re-creates the atmosphere required for human and animal life. The results of urbanization have threatened the tenuous ecological balance by eliminating large stands of vegetation while adding numerous pollutants to the atmosphere.

Trees are the most threatened form of vegetation. The effects of construction damage to trees may be longlasting and cause slow destruction. Undercutting roots during excavation, skinning bark with construction equipment, and injuring bark by piercing it with nails or climbing spurs permits easy entrance for fungi and insects. Paving of areas which serve as water catchments or aeration points for root systems are also factors in the continuing decline of trees and the lowering of the watertable. Wind destruction of newly unshielded trees often topples many that stood

together in self-protecting groups. The loss of trees increases erosion. Extensive root-systems aid in slope retention, an important consideration in the hilly areas of San Mateo. Dense trees and shrub stands prevent many of the surface landslips and large slumping common in grasslands and on non-vegetated slopes. Furthermore, even the leaf-fall makes a major contribution to hillside soil conservation by blanketing the soil with rain-absorbing mulch, thereby preventing winter storm erosion and reducing the load on the City's storm drainage system.

Most trees planted today are vegetatively reproduced. Their mature size, shape, and color are known from the outset. Conscious effort is made in selecting trees best suited to given conditions and most capable of producing desired effects. Advance planning is necessary to insure continuous high quality vegetative development. Since trees and other forms of vegetation take a considerable time to mature, advanced planning must be truly comprehensive in scope and long-range in time to achieve optimum results.

D. Possible alternative solutions

1. Identify areas of unique value in their natural state for purposes of educational, scientific, and aesthetic uses, and plan and program for their conservation.
2. Enact ordinances which control the use of trail vehicles on lands where such use may destroy natural resources and cause harmful effects on adjacent property.
3. Acquire the additional park lands recommended in

the Parks and Recreation Element and demonstrated as essential to maintaining a quality life-style in the City.

4. Encourage developers to seek the retention of natural environments whenever possible.
5. Continue to diligently apply the provisions of the Heritage Tree Ordinance and the Site Development Code.
6. Support programs aimed at the beautification of the cityscape in the dense urban sections lacking in natural areas.
7. Promote public awareness about the role vegetation plays as a health, economic, aesthetic, educational and recreational resource.

2. AIR QUALITY

A. Background

Air pollution adversely affects man and his environment in many ways. It soils his home and interferes with the growth of plants and shrubs. It diminishes the value of his agricultural products. It obscures his view and adds unpleasant smells to his environment. Most important, it endangers his health.

The extent of air pollution depends heavily on how weather disposes of the pollutants. The ability of

the atmosphere to dilute and disperse them is limited by two factors--wind speed and the depth in the atmosphere to which air near the surface can be mixed. Although considerable variation occurs from day to day in the extent to which these factors disperse air pollution, the same patterns tend to repeat themselves over months or years. On some few days in a year, strong and highly stable conditions let small quantities of pollutants accumulate and build up to serious proportions. Between these extremes, variations in weather conditions create varying levels of pollution over a given area.

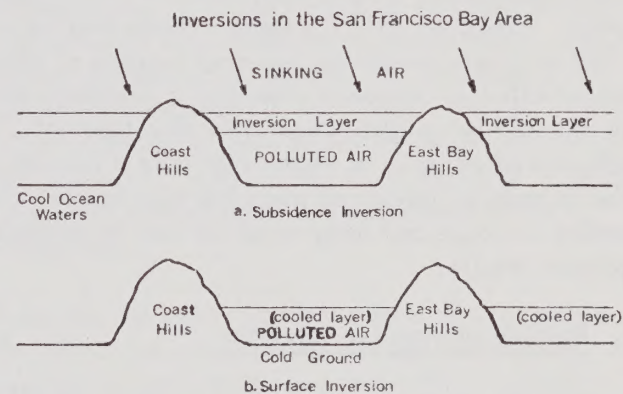
San Mateo and other Bay Area cities are naturally susceptible to air pollution. The flat surface of the Bay, surrounded by mountain ranges, is an ideal container for pollution.

Temperature inversion causes air to be trapped and prevents dissipation of pollutants. There are basically two types of inversions, as indicated in Figure 2, but their effect is essentially the same.

The subsidence inversion (Figure 2a) is present during most of the year except when winter storms move through the area. The elevation of its base varies: it may be as much as several thousand feet above the ground or as little as a few hundred feet. Because only the air under the inversion is available for diluting pollutants, elevations of the base is significant. For example, an inversion base located at a height of 3,000 feet permits the discharge of six times the amount of pollutants allowed by an inversion only 500 feet high - given equal air quality standards and wind movement. Summer weather

is dominated by the subsidence inversion/ sea breeze phenomena. The inversion tends to trap pollutants beneath it while the breeze aids in dispersing pollutants while moderating temperatures along the coast. During periods when the sea breeze does not blow, there is a very high pollution potential.

FIGURE 2



Source: Franklin K. Lane, The San Francisco Bay Area, Its Problems and Future, Vol. II, 1966, Page 10.

Surface inversion (Figure 2b) is present generally on clear winter nights when the earth cools rapidly and in time cools the air near the ground. The base now is at the surface of the earth and the pollutants are confined in a shallow layer of air close to the ground.

Of concern in air pollution dispersion is wind dispersion. The wind pattern at San Francisco International Airport is a good approximation of the winds that exist in San Mateo. However, winds are slightly different in the City as topography differs. Wind direction is most frequent from the west to west-northwest reflecting the presence of the sea breeze. The frequency of wind direction at the San Francisco Airport can be found in the Technical Supplement.

B. Existing conditions

There are a number of Bay Area Air Pollution Control District (BAAPCD) monitoring stations located throughout the Bay Area. While no air monitoring station exists in San Mateo itself, stations are located in Burlingame and Redwood City. It is assumed that because of its proximity and similarity, San Mateo's air quality is approximately the same as that in these two cities.

San Mateo is not unlike most other cities throughout the nation that are faced with air pollution problems. Its major single source of air pollution is the automobile, as the City has very little industry. However, based on the number of days that standards were exceeded at the monitoring stations, oxidant concentrations are the largest problem in the area. Oxidants are photo-chemical air pollutants which can oxidize certain chemical reagents

not readily oxidized by oxygen. Oxidants include ozone (O_3), nitrogen dioxide (NO_2), and organic peroxides; an explanation of each can be found in the Technical Supplement.

A recent study by the BAAPCD of suspended particulates (visible air pollution) indicated some improvements in particulate levels during the years 1969-1971. A similar study, which measured oxidant concentrations (photochemical-smog) and included controls for weather variables, noted a plateau or leveling off effect during the past three years. These studies suggest a possible improving trend in air quality in the Bay Area basin, or at least no worsening of the situation.

C. Possible alternative solutions

1. Support and lend assistance to any countywide or regionwide air quality or transportation plan that would effectively reduce air pollution in the Bay Area.
2. Support the development of a countywide bus system and its coordination with the municipal bus system.
3. Implement the In-Lieu Parking Fee Program as an incentive to people to ride the municipal bus system.
4. Establish land use policies aimed at reducing vehicle miles traveled.

5. Evaluate policies within the Circulation Element of the General Plan for their effectiveness in reducing pollution from vehicular trips.

3. WATER RESOURCES

A. Background

Water and man's use of it has shaped much of San Mateo's early form. Rains falling on the Santa Cruz Mountain range have eroded them over the millenia. Streams formed ravines and valleys carrying sediment toward the bay and depositing it along the way and in the bay itself. Man's dealing with water has in the most part been cavalier. Demands for land and development on it resulted in the burial or culverting of creeks and diking and filling of the bay. Water as a resource and part of the City's fabric is currently in a state of neglect, having merited only utilitarian concern as water for human consumption, runoff water to be conveyed without flooding, and water to be excluded from urban development.

To the west, Crystal Springs Reservoir impounds water transported from the Hetch Hetchy water project of the San Francisco Water Department. The activity of the San Andreas Fault and dams have made this area a large natural reservoir. Crystal Springs lakes and the surrounding watershed land create a unique and beautifully scenic area. Its character is protected by the water department's ownership of most of the surrounding watershed.

A number of year-round and intermittent streams flow from west to east. However, over the years most have

been buried, culverted, or channeled for drainage to facilitate rainwater runoff (see Figure 3). Some of the streams traverse the rear yards of private property. In such cases the streambed centerline is generally the property line.

B. General description

1. San Mateo Creek. San Mateo Creek is the most significant of these streams. The creek originates from Lower Crystal Springs Reservoir at Crystal Springs Dam. It was one of the largest creeks on the Peninsula; certainly the largest on the Bay side for it drained the great Spring Valley Catch Basin that now helps furnish water to San Francisco and other Peninsula cities.

The creek is bordered by Crystal Springs Road and both meander through steeply sloped undeveloped hillsides, first through unincorporated areas and then the Town of Hillsborough. The creek enters San Mateo about two blocks west of El Camino Real. From that street to the railroad San Mateo Creek flows in either underground or surface concrete culverts. Between the railroad and Bayshore Freeway the creekbed remains in a relatively natural state. From Bayshore to the bay, however, it has been channeled for drainage purposes.

2. 16th Avenue Channel. The channel begins at 16th Avenue and the railroad and terminates in Marina Lagoon by the waste water treatment plant. It is an artificial channel along its entire



FIGURE 3

length. The channel and access alongside it is owned by the City of San Mateo. It is irregular in grade which results in settling velocities, odors, and pest control problems.

3. 19th Avenue Channel and Beresford Creek. This open channel originates at the railroad tracks, traverses Fiesta Gardens, and empties into Marina Lagoon. It drains an area bisected by the J. Arthur Younger Freeway.

A portion of the 19th Avenue channel watershed includes Beresford Creek. This is a natural creekbed extending from Younger Freeway, behind Laurelwood Shopping Center to Beresford Park where it is forced into underground drains. Its water is conveyed underground to the railroad tracks and the open ditch. The lower portion of the creek passes through parcels developed with single-family homes. The upper portion flows through an arroyo which retains much of its natural setting, even though adjacent land is developed. These adjacent parcels are quite large and their size has permitted development on a small portion and preservation in a natural state of much of the remaining land, including considerable natural vegetation.

4. Laurel Creek. The Laurel Creek watershed is the largest after that of San Mateo Creek. South of the Laurel Creek Dam, its watershed includes the undeveloped Sugarloaf area. Below Laurel Creek Dam, the creek backs on single-family homes on one side and a parksite on the other side. Further east it passes the rear property lines of single-family homes, the Abbott and Laurel School sites, and the Hillsdale Library, then

through the Hillsdale Gardens apartment complex. The creek then passes through culverts under El Camino Real and the railroad tracks and assumes a relatively natural course for a few blocks until it enters an open concrete channel around George Hall School, to Lauriedale. There it becomes an unlined channel to Marina Lagoon.

East Laurel Creek is also a part of the Laurel Creek watershed. It originates north of the East Laurel Creek Dam near East Laurel Creek Drive. Its course abuts rear yards until it traverses under Laurelwood Drive appearing again shortly before entering the Laurel Creek tributary near Fernwood Street.

5. Edgewood Creek. The major portion of this creek lies in Hillsborough and Burlingame and its drainage basin is oriented towards Burlingame. It passes through San Mateo just to the west of Edgewood Road and parallels it. In the City the creekbed follows a natural course, generally at the rear of abutting properties.

Similar to other creeks in their natural state, Edgewood Creek is highly scenic; considerable vegetation including bushes and trees abound.

6. Borel Creek. While most of this creek has been diverted into open or underground culverts, it is still in a relatively natural state in parts of Foothill Terrace. Where the creek is in its natural state, significant natural vegetation including trees and shrubs may be found alongside the

streambed.

7. Marina Lagoon. The former Seal Slough is now an artificial lagoon created by the diking and filling of Foster City and Mariner's Island. Marina Lagoon currently serves a dual purpose: it is a flood basin for storm water retention during the winter and is available for recreation during the rest of the year.

8. San Francisco Bay. San Mateo's bayfront shoreline extends from Burlingame's southern border in the north to Foster City in the south. This concave stretch of shoreline bounds a shallow expanse of water that the two projections of Coyote Point and Foster City tend to shield from most tidal stream flow. The resulting hydraulic pattern reflects a rather quiet shallow body of relatively still water.

The shallow nature of the San Mateo bayfront results in broad expanses of exposed bottom mudflats at low tide. The entire length of the shoreline has been altered by diking so that at high tide this same area is covered by water to the face of the dikes. This artificially created situation leaves less than two acres of land that could be classified as marsh. The hinterland has for the most part become urbanized. Plans for the entire shoreline are contained in the Shoreline Plan of the General Plan.

9. Water quality. San Mateo's water is supplied by the California Water Service Company from the San Francisco Hetch Hetchy source in the Sierra Nevada Mountains. The City's water supply is of unusually good quality. It lends itself to exceptionally good treated wastewater for re-use for the irrigating of landscape

sources. Any increase in chemical constituents after the wastewater passes through the sewerage system is not enough to rule the water unacceptable for most potential reuse purposes.

C. Problems

1. Urban encroachment. In years past the population did not require substantial open space acquisition for recreational use. Due to a limited population there was not the pressure that exists today on lands and waterways for their development to recreational uses. However, the population of San Mateo has grown to such an extent that encroachment on the City's watersheds and shorelines has created a need to provide parks and open space using the aesthetics of moving water to create a mood of tranquility.

The watershed around San Mateo has often been considered a negative resource due to flooding potentials and increased costs to the City in engineering and flood control construction. Because of this, past engineering studies, as a rule, did not deal with the aesthetic and recreational value of watershed areas. The main emphasis of these studies was the amounts of water present at a particular point and the speed in which it moves to discharge from a given area. However, with increasing demands for open space and recreation the multiple use of waterways is becoming a necessity.

An example of multiple use is the proposed

development of Marina Lagoon. The Lagoon is primarily a flood control basin which receives fresh water from three major creeks. In addition, the basin receives bay water from O'Neil Slough, principally during the dry periods of the year. Usually at some time in spring, the tide gates are opened and the basin level is adjusted to accommodate a wide variety of recreational activities.

In developing waterways for recreational purposes the quality of water as well as the capability of uses, if more than one exists, should be given substantial consideration. Public access and adequate maintenance are also equally important. Many times development adjacent to the waterways may make accessibility difficult. However, in areas where vacant parcels exist, proper measures should be taken to allow for the future development and access to these recreationally potential waterways.

2. Aquatic nuisance. There exists a variety of significant nuisance problems associated with Marina Lagoon. During the development and maintenance of the Lagoon, local residents, responsible agencies, and developers have been faced with various problems. A series of studies have been performed on the water quality of Marina Lagoon. A cursory review is found in the Technical Supplement.

D. Possible alternative solutions

As noted previously, the areas adjacent to waterways are mostly developed. What were once areas of natural greenery and vegetation are now culverted or adjacent to some type of development. This section addresses itself to the remaining areas of open space recreational and/or

scenic value associated with some of the existing waterways and the potential development of these areas.

1. San Mateo Creek. The most significant portion of San Mateo Creek lies between the railroad and Bayshore Freeway. This portion of San Mateo Creek is an unusual and often unseen resource. It is the only significant natural creek area in a built up neighborhood. Buildings are not situated close to the creek as spillage of water from Crystal Springs Lakes during excessive rainy periods frequently occurs. This results in considerable water flow of consequence to developments immediately adjacent to the creek.

For most of its length there is sufficient space to feasibly develop a linear park. This is particularly true along Second Avenue between Grant Street and Fremont Street. There is also considerable vacant land adjacent to the creek across Third Avenue on the block between Third Avenue and Fourth Avenue and Humboldt Street and the Bayshore Freeway interchange.

Problems exist in such places where buildings are close to the water making it difficult to provide walking access adjacent to the water. However, good design could overcome this problem and that of continuous access where the creek flows below street level.

Another problem is that the creek is affected by tidal action. It is not uncommon to find traces of

salt water as far up the creek as the Bayshore Freeway.

Improvement as a linear park could enhance this area and provide a number of other benefits. The varied vegetation could be preserved and water flow could be improved, thereby making the creek an excellent recreation facility. At its eastern end it could help improve one of the more significant entryways into the City; an entry which is now quite unattractive. At this point the creek traverses under East Third Avenue, a proposed scenic roadway. Enhancement of the two would be an asset to the City. At its westerly terminus it could improve the appearance of the downtown area.

From Bayshore Freeway to the bay the creek is unattractive. However, there is room for improvement. In this location the creek is close to the bay where a shoreline park will be created in the future. This park could be extended inland along the creek. The creek itself is adjacent to a large vacant parcel of land so that future improvement is not constrained by existing development. Future development of this parcel could include treatment of the creek as a linear park and access point to the future Shoreline Park.

2. 16th Avenue Channel. The potential of the drainage channel as a creek or body of water is limited. However, certain design improvements could be made similar to those used for a portion of the channel along and around Bayside School. There the restructuring of the channel resulted in a curvilinear alignment along which a small park strip may be possible.

3. 19th Avenue Channel. The open channel is very

much like the 16th Avenue channel, unlined for the most part, with adjacent service access. It is shorter but could be used for pedestrian or bicycle paths. A future park site borders on the channel in the Fiesta Gardens planning area section, offering the opportunity to include this water feature in the design scheme of the park.

Between Bayshore and Marina Lagoon, the channel traverses vacant land. Future development will, therefore, allow the possibility to deal with the drainage channel as a design opportunity rather than the single conveyance purpose it currently serves.

4. Laurel Creek. The potential of Laurel Creek below East Laurel and Laurel Dams is limited, inasmuch as the creek passes through developed areas. However, the natural portions of the water course may lend themselves to a linear park treatment. Approximately a block and a half of one side of the creek is publicly owned - Abbott and Laurel Schools on the north and Hillsdale Library on the south. The creek is adjacent to vacant land in Lauriedale, thus offering the opportunity of including the water feature in plans for the vacant land.

4. Marina Lagoon. As an open space and recreation resource, Marina Lagoon is important. It is a physical separator of developed land and enjoyable to view. Its usefulness as an active recreation resource is limited, depending on its function as a catch basin and on the solution of the water

quality problem.

Future improvements will result in improved water quality and increased use of the lagoon as an active recreation area. It would, therefore, seem appropriate to provide public access along its shore wherever possible and to design projects on currently vacant land so that they take advantage of the lagoon and in turn enhance it.

5. San Francisco Bay. In 1971 the City of San Mateo adopted the Shoreline Park Plan which included the entire waterfront within the City limits. The plan was influenced by the Bay Conservation and Development Commission (BCDC) policies of minimal fill and is thought to be in conformance with the BCDC Bay Plan. Approval of this specific shoreline plan is pending before BCDC. The plan includes a 700 boat marina to be located at the mouth of Marina Lagoon; access to the lagoon is proposed.

6. Water quality. Eventually the City will use treated wastewater for irrigational purposes. The potential for reclaimed wastewater reuse for purposes other than landscape irrigation, including groundwater recharge, industrial process or cooling water, and development of recreational lakes, is minimal and in any case will not be considered as a viable alternative to near-term continued Bay discharge of the major portion of the City's wastewater.

4. WILDLIFE

A. Background

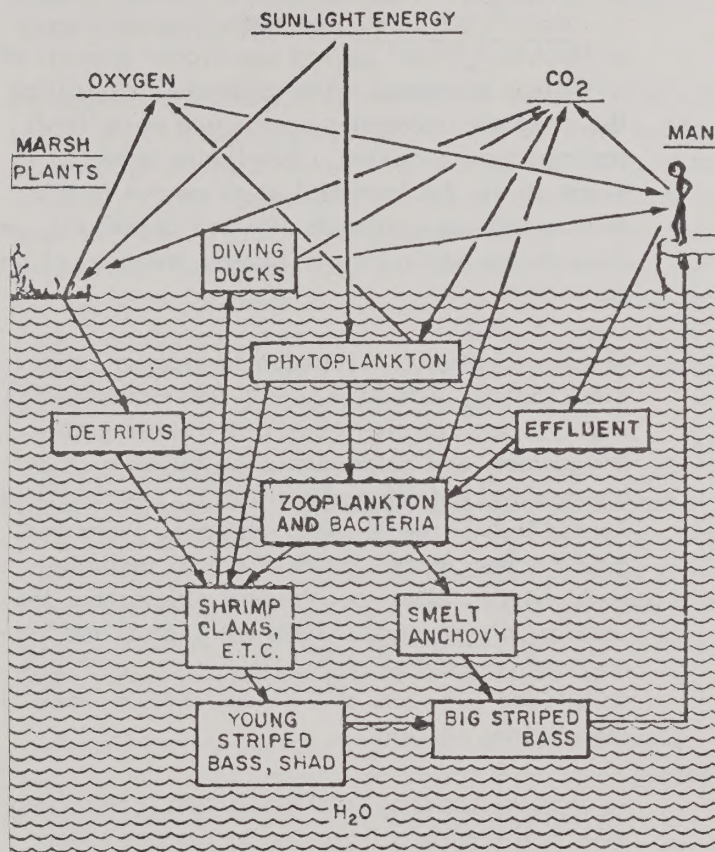
All living things are meshed in an inter-dependent web

of life. The natural environment is a sensitive indicator of a healthy human environment. Every form of life, including man, is dependent on the quality of its environment for the maintenance of the species. Because fish and wildlife and man are inseparable from land and water, it is necessary to plan projects to conserve and improve wildlife-related values while maintaining and improving the quality of man's environment.

Over three square miles (3.3) of San Mateo are tidelands. This portion of the City is an intrinsic part of the Bay ecosystem (see Figure 4). The fishery resource of San Francisco Bay includes anadromous fish (which come through the Bay during their lifecycle to spawn), native fish that spend their entire lives in the Bay, and crabs, shrimp, and shellfish. The anadromous fish are the most important. They generally mature in the ocean and enter fresh water to reproduce. Anadromous fish include striped bass, king salmon, sturgeon, steelhead trout, and shad. The shallow waters along the San Mateo shoreline are important to the survival of young salmon and steelhead trout. Striped bass use virtually the entire Bay.

Smelt and anchovies, both plankton feeders, are found throughout the Bay. Clams are present in coarse sand and gravel areas. Oysters live in the deeper waters offshore. Shrimp, which feed on decaying marsh plants and are the basic diet of almost all the larger fish, move into shallow water at high tide and return to the deeper channels at low tide. These animals may be found at

FIGURE 4
SIMPLIFIED BAY ECOSYSTEM



Source: H. Thomas Harvey, Some Ecological Aspects of San Francisco Bay, Prepared for San Francisco Bay Conservation and Development Commission, San Jose State College, October 1966

Coyote Point and other remaining wetlands in the City.

San Francisco Bay is the largest river-mouth area along the entire California coast. As such, the region bordering the Bay is a vitally important resting place, feeding area, and wintering ground for the thousands of birds on the Pacific Flyway. Marsh areas are used for nesting, feeding, and protective grounds for many birds. Shorebirds depend upon salt production lands for resting areas during high tide. Exposed mudflats produce mussels, clams, snails, worms, and insects that shorebirds depend upon for survival. Open water areas are used by ducks, cormorants, geese, and loons for resting and sometimes for feeding.

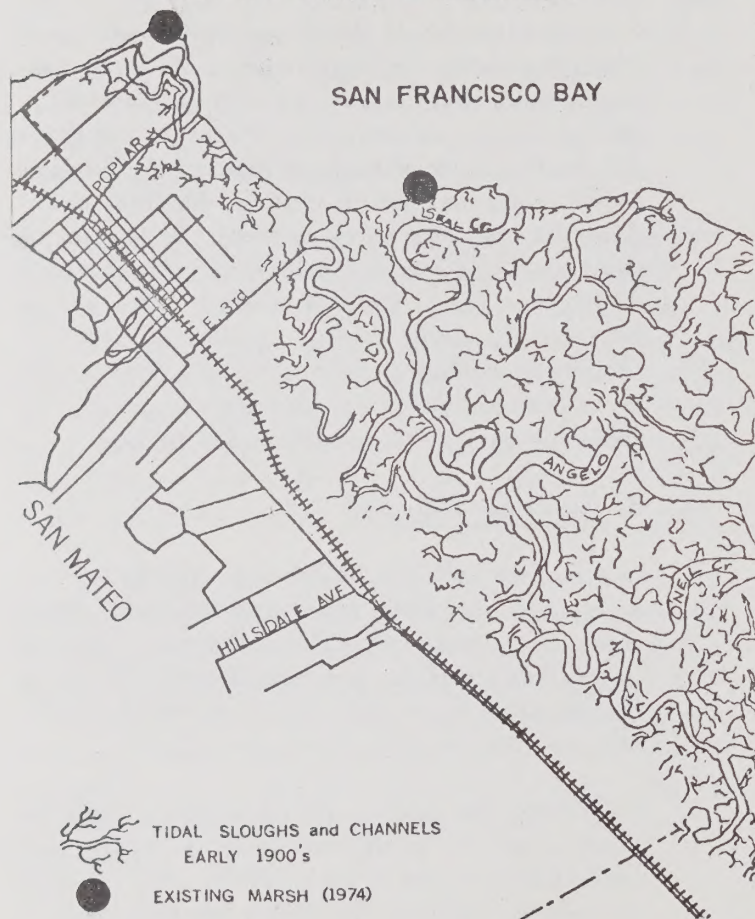
B. Existing conditions

Few quality habitats for fish and wildlife resources remain within the immediate area. Intensive urbanization in the flatland areas, expansion in the Western Hills, and considerable fill along the shoreline have destroyed or seriously altered natural wildlife areas (see Figure 5).

Aside from the species of birds and small animals found in private yards, San Mateo is largely devoid of areas suitable for wildlife. Any remaining natural habitats, therefore, are especially significant. One aspect of their significance lies in their proximity to the people. These areas should be maintained to serve the needs of the citizens: for the enjoyment of those who value

FIGURE 5

HISTORIC ORIGINS of MARSHLAND



Source: U.S. Geological Survey, Areal Geology, California San Mateo Quadrangle, Edition, October, 1913.

the presence of wildlife in man's environment and as an easily accessible laboratory for the study of biology, botany, and ecology.

1. Mariner's Island. The remaining open areas of Mariner's Island support significant amounts of wildlife. Numerous water-oriented birds utilize the channels, rainwater ponds, and open fields for feeding and resting. A delicate balance exists among the interdependent species in this area; when one species is affected negatively, serious repercussions extend to other members of the community.

Geese and puddle ducks such as widgeon, shoveler, pintail, cinnamon, teal, and mallard; diving birds such as pie-billed and western grebes, mergansers, and goldeneyes; field birds such as brewers and red-winged blackbirds, meadow larks, horned larks, linnets, song sparrows, pyrites and gold finches; raptors (birds of prey), including owls, hawks, kites, and falcons which share the local supply of small rodents with egrets and herons; and ring-billed gulls, field mice, and jack rabbits are just some of the many species inhabiting Mariner's Island.

2. Marina Lagoon. Marina Lagoon is relatively deep and therefore inhabited by species which survive well in deep water. Several types of diving ducks -- goldeneyes, scaups, canvasbacks, and pie-billed grebes -- find the area a suitable niche. Along the edges may be found long-legged

waders, such as willets, yellowlegs, egrets, and herons.

3. Mouth of Seal Slough. The 16th Avenue channel, bringing storm waters from the Western Hills of San Mateo, converges with the Marina Lagoon outlet near Third and Detroit Avenues.

Relocation of the old sewer outfall in the late 1960's has permitted a remarkable recovery of the bayfront marsh. Elimination of the effluent flow is allowing the area to refurbish itself. Given the chance, it can be a most viable wildlife habitat. The implementation of the proposed yacht basin may have adverse affects on the refurbishing of the bayfront marsh. Although the Shoreline Park Plan designates an area as marshland, there is no present indication that this area will turn to marshland, especially if the bayfront dike is improved.

The area has the characteristics of a salt marsh: grindedelia (gum plant), pickleweed, and cord grass exist at different elevations and locations along the water. As a marsh, the area is a nursery for numerous forms of wildlife. Shell fish breed in the area; snowy and American egrets, avocets, willets, ruddy ducks, sparrow hawks, and mourning doves are all found here.

Fish-eating redbreasted mergansers and blue-winged teals have recently been seen in the area; their presence emphasizes the natural regeneration in progress.

4. Pacific Boulevard. The grove of eucalyptus trees along the drainage channel off of Pacific Boulevard is a popular roosting place for snowy egrets and black-crowned night herons. At dusk throughout the winter,

the birds come in from various area sloughs. They settle in pairs for the night, then leave for feeding areas at sun-up. The importance of this eucalyptus grove cannot be underestimated. Without a suitable place to rest, the niche of these large birds would be seriously altered.

5. Coyote Point. Numerous fish and wildlife species are found in different locations in Coyote Point. On the Knoll, wildlife consists of small rodents and birds. The high wild grass provides food and protective cover for animal populations such as meadow mice, grasshoppers and crickets. These animals are the basic food supply of the sparrow hawks found at Coyote Point. Any alteration in ground cover will bring changes in these populations. Meadowlarks, goldfinches, and other migratory birds such as the white-crowned and golden-crowned sparrows are also found on the Knoll.

Along the Peninsula Beach there is a muddy sand bottom which differs from the Bay mud to the north and south. Certain animals prefer this sandy-mud substrata to Bay mud. Striped bass, shiner perch, sculpins, and brown smoothhound sharks are among the aquatic species found on the sandy bottom.

Several exotic mollusks have become established in the Bay waters around Coyote Point. Two examples are the Eastern white slipper shell and the Oriental mussel. The mussel occurs in the deeper water offshore. These animals, which

probably arrived accidentally in shipments of oysters from the Atlantic Coast and Japan are currently under scientific study.

6. Arroyo Court. Arroyo Court is a capsulized riparian woodland close to the downtown. Along the San Mateo Creek stream bed, willows and elderberry trees are found in abundance. Common bushtits, brown towhees, scrub jays, steller jays and other small birds inhabit these trees. Red and gray squirrels are also plentiful in the area.

7. Sugarloaf-Laurel Creek. The Laurel Creek Canyon area at the base of Sugarloaf Mountain and Sugarloaf itself, comprise an important natural area. Along the creek itself can be found many riparian woodland inhabitants. Hummingbirds, common bushtits, scrub jays, song sparrows, and California valley quail (state bird) are all known to inhabit the area. The more exposed grassland areas harbor Western meadowlarks, horned larks, red-tailed hawks, meadow mice, and bush rabbits. Ascending Sugarloaf, the chaparral areas are the major habitat of the seed and insect-eating birds which are very important to the ecology of that biome (environmental setting). Several species of finches and sparrows are found here. The woodland area primarily supports the type of wildlife found in adjacent areas including raccoons. Deer, once frequently noticed in this area and throughout the Western Hills, are rapidly disappearing due to continual urban expansion. They cannot compete with man-made changes that reduce their habitual areas and severely alter their life-style.

8. Crystal Springs Canyon. Wildlife is not constrained

by City limits and therefore crosses City boundaries at will. The verdant areas along Crystal Springs Road and Polhemus Road are teeming with wildlife. Since these areas are partially within the City limits and within the City's sphere of influence, and since they serve as an important natural area for many citizens, the preservation of natural resources in the canyon is of concern to the City of San Mateo.

C. Problems and issues

There is a pressing need to recognize and appreciate the highly specialized nature of lifeforms. Each species has a preference and a place, and is never "out of place." Man-made developments have caused rapid changes and immense pressures which have almost irreversible destructive effects. All remaining biomes, vital to the existence of wildlife, have reached their saturation points. There is nowhere for displaced wildlife to go.

The biological interrelationships which exist among living organisms, man included, and the dependence of all living organisms have on each other makes it imperative that the less defensible pieces of the environmental puzzle be preserved. At times, preservation can only be achieved at costs that do not seem immediately relevant. Critical problems arise in trying to determine to what extent immediate consideration vies with the future.

It is only logical to attempt to preserve as natural

an environment as possible in those areas critical to sustaining wildlife. Often it is not a dichotomous matter of doing or not doing something, but rather how one does it. Man's use of a resource area should exist in concert with the needs of wildlife rather than instead of those requirements.

1. Effects of fills and piers. The worst of many problems affecting fish and water birds is the elimination of three of their four principal habitats (tide flats, marshes, and shallow areas -- leaving only water) through filling. Most marsh areas have been "reclaimed" through diking and filling. As a result, the waterfowl populations have been drastically reduced. Fills and piers also alter the direction and velocity of water movements created by tides and fresh water inflows.

2. Effects of water pollution. Pollution has resulted in the contamination of shellfish and other marine life, making them unsafe for human consumption. Domestic sewage and industrial wastes are the usual sources of such contamination. Another major effect of pollution is the elimination of dissolved oxygen in the water. Pollutants consume the oxygen necessary to marine life. In addition, some pollutants are poisonous and occasionally large numbers of fish are killed by accidental discharges of untreated toxic wastes.

3. Effects of dredging. Dredging may be beneficial if it improves tidal flushing or the fish habitat. On the other hand, dredging removes the aquatic life on the bottom, increases the turbidity in the area, and causes sedimentation problems.

4. Endangered species. The California Department of Fish and Game recognizes that a number of species found in California are endangered or rare. Several of the species included in this group are known to inhabit the Bay Region and the San Mateo area in particular.

One of the endangered is the California Clapper Rail. Highly specialized and apparently incapable of adapting to environmental change, clapper rails are found in only a few of the salt marshes in the Bay Area. They have been observed in the small marsh of Coyote Point. Their presence implies that the marsh has increased sufficiently to support the species. Bay fill and drainage as well as industrial pollution threaten the continued existence of the Clapper Rail.

The Salt Marsh Harvest Mouse, unique because it is one of the few mammals able to drink salt water, is also an endangered species. Continual destruction of salt marsh habitats, such as portions of Mariner's Island and the mouth of Seal Slough, by bay fill and diking are major factors contributing to the decline of the salt marsh harvest mouse.

Another endangered species that may be seen at Coyote Point is the California Brown Pelican. Brown Pelicans also fish the Marina Lagoon area. In recent years the species has had difficulty reproducing itself due to collapse of thin-shelled eggs during incubation, attributed to the effects of environmental pollutants.

D. Possible alternative solutions

1. Study the feasibility of protecting or conserving areas recognized as significant wildlife habitats.
2. Manage fish and wildlife resources so that degradation does not result from changes in land use.
3. Seek the multiple use of fish and wildlife resource lands in a manner which minimizes conflict and encourages economic, educational, ecological, and/or recreational benefits.
4. Examine the feasibility of wetland preserves which would provide waterfowl habitat necessary to the maintenance of the flyway route. Such wetlands would also function as important habitat sources for many other small animal species.
5. Support flood control, water quality enhancement, and air pollution control programs which will enhance the environment for wildlife and man alike.
6. Obtain rights of public access to any resource areas not under City ownership.
7. Where a natural resource occurs on a boundary, seek the possibility of resolutions asking mutual protection of such areas. Cooperative efforts should be pursued in the Sugarloaf-Laurel Creek and Crystal Springs Canyon areas, and any other places where the situation may arise.
8. Re-evaluate the Shoreline Park Plan in light of its affect on existing and designated bayfront marshlands.

5. TOPOGRAPHY

A. Background

San Mateo is located east of the Santa Cruz Mountain Range which has an average height of approximately 1,200 feet and extends north and south through San Mateo County. The City is located on the bayside and includes the bayside foothills, bayside plain, filled in tidal meanders, bay marsh, and mud flats (see Figure 6). The elevation of San Mateo varies from about two feet at the bay muds to 675 feet at the College of San Mateo. The San Bruno and Crystal Springs Gaps are corridors which allow cooling sea-breezes and fog to pass and influence summer weather.

B. Existing conditions

Significant topographic features in the content of this section are primarily the foothills of the Santa Cruz Mountains or the western hills. Development in these areas has occurred relatively recently, for two reasons: 1) the availability of easy-to-develop vacant flat land had reached a development-saturation point, and 2) earth-moving equipment which can economically shape physiographic features on a large scale has been available relatively recently.

During the early stages of development in the western hills, their resultant shape was determined by the requirement of what was to be built.

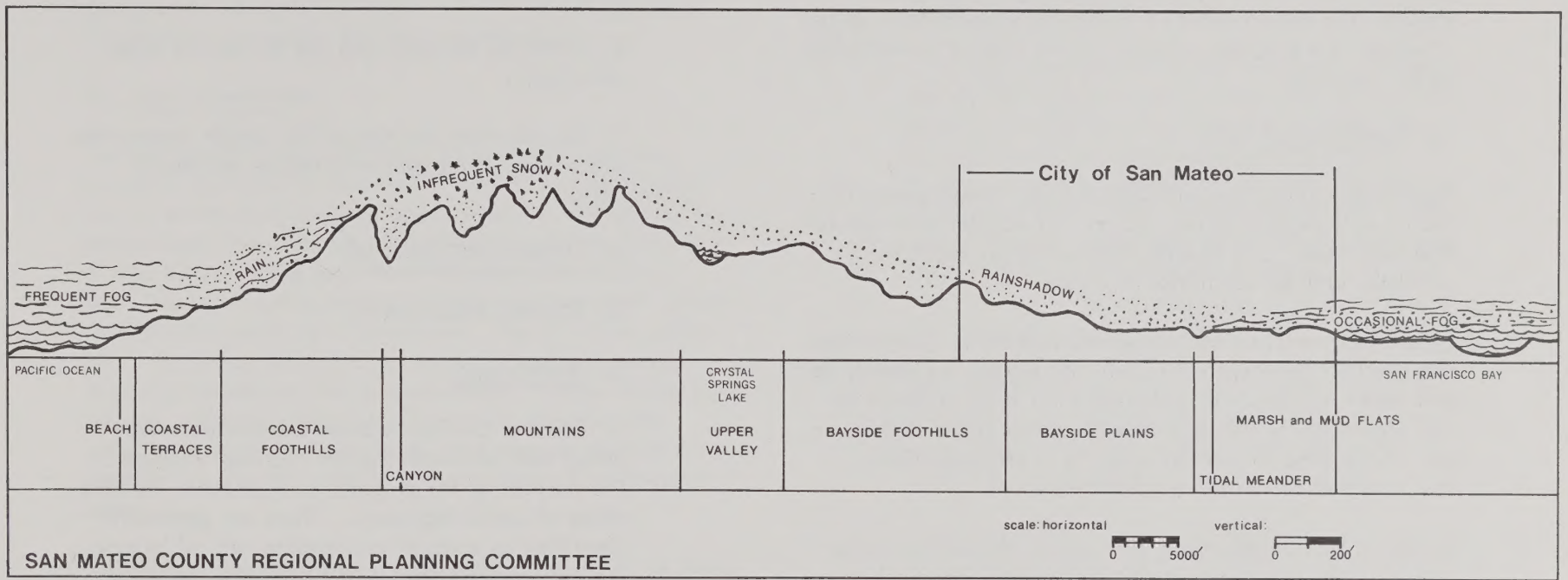


FIGURE 6

SECTIONAL ILLUSTRATION OF SAN MATEO TOPOGRAPHY

As a consequence, natural topographic features and associated vegetative cover, including trees, were frequently lost. More recently, development has taken into account the pre-development nature of sites and has preserved both hills as well as trees and other vegetation. Nevertheless, the requirements of buildings, especially in terms of streets and parking, usually require extensive reshaping of hilly terrain.

C. Problems and issues

Topography becomes significant to urban development primarily with respect to two factors: 1) hazards both natural and man-made, and 2) secondary effect on vegetation, wildlife, and the aesthetics of an area.

Slopes in themselves are not severe problems. Only when the need for development occurs and terrain is altered, do problems become acute. There are a number of areas in San Mateo where this is evident (other sections of this report, including the seismic safety and safety sections, speak to this concern in greater detail).

Assuming that development will occur, the critical question becomes one of preserving the natural topography for safety reasons as well as aesthetic and community values reasons.

D. Possible alternative solutions

1. Determine development criteria for unstable slopes and soils.
2. Revise the grading ordinance in conjunction with the

development criteria.

3. Preserve the City's topographical features as an effort to reduce loss to property, life, and plant resources.
4. Establish the best land use for various slope categories.
5. Request that planting of the proper vegetation accompany development to reduce erosion of soils.

III. URBAN RESOURCES

1. SCENIC HIGHWAYS

A. Background

In 1963 the California State Legislature established the California Scenic Highway Program. The purpose of the program is to preserve the amenities of scenic highways. These are generally identified as areas of outstanding natural beauty that are traversed by State highways. Responsibility for scenic designation of routes lies in the hands of the Scenic Highway Advisory Committee and the State of California, Department of Transportation. A request originating at the local level (City or County) must be made in order to receive such designation.

Joint Cities/County Scenic Highway Program. The County of San Mateo is undertaking a study of scenic highways within its jurisdiction. The City of San Mateo is cooperating with the County since a joint effort is the most rational course to take. There are several instances where designation of routes is logical only if the two (or more) jurisdictions designate the same routes as scenic.

B. Scenic roadways

Several streets within the City merit identification as streets of significant visual value or streets with a potential to assume such quality (see Figure 7). The following streets meet this criteria: Crystal Springs Road, Polhemus Road, Younger Freeway, and Alameda de las Pulgas. East Third Avenue has been identified as having the potential of being scenically developed. The first four streets will more than likely become part of the County Scenic Highway System and be so designated. Skyline Boulevard, the only officially designated scenic highway in the county, and the Junipero Serra Freeway are also identified by the County, albeit neither traverse City boundaries.

1. Crystal Springs Road. Perhaps the most scenic of roads in San Mateo is Crystal Springs Road, connecting El Camino Real and Skyline Boulevard. It is a narrow winding road paralleled for most of its length by San Mateo Creek. In its upper portion, Crystal Springs Road winds through the undeveloped San Mateo Creek watershed. Adjacent lands are quite steep and heavily wooded.

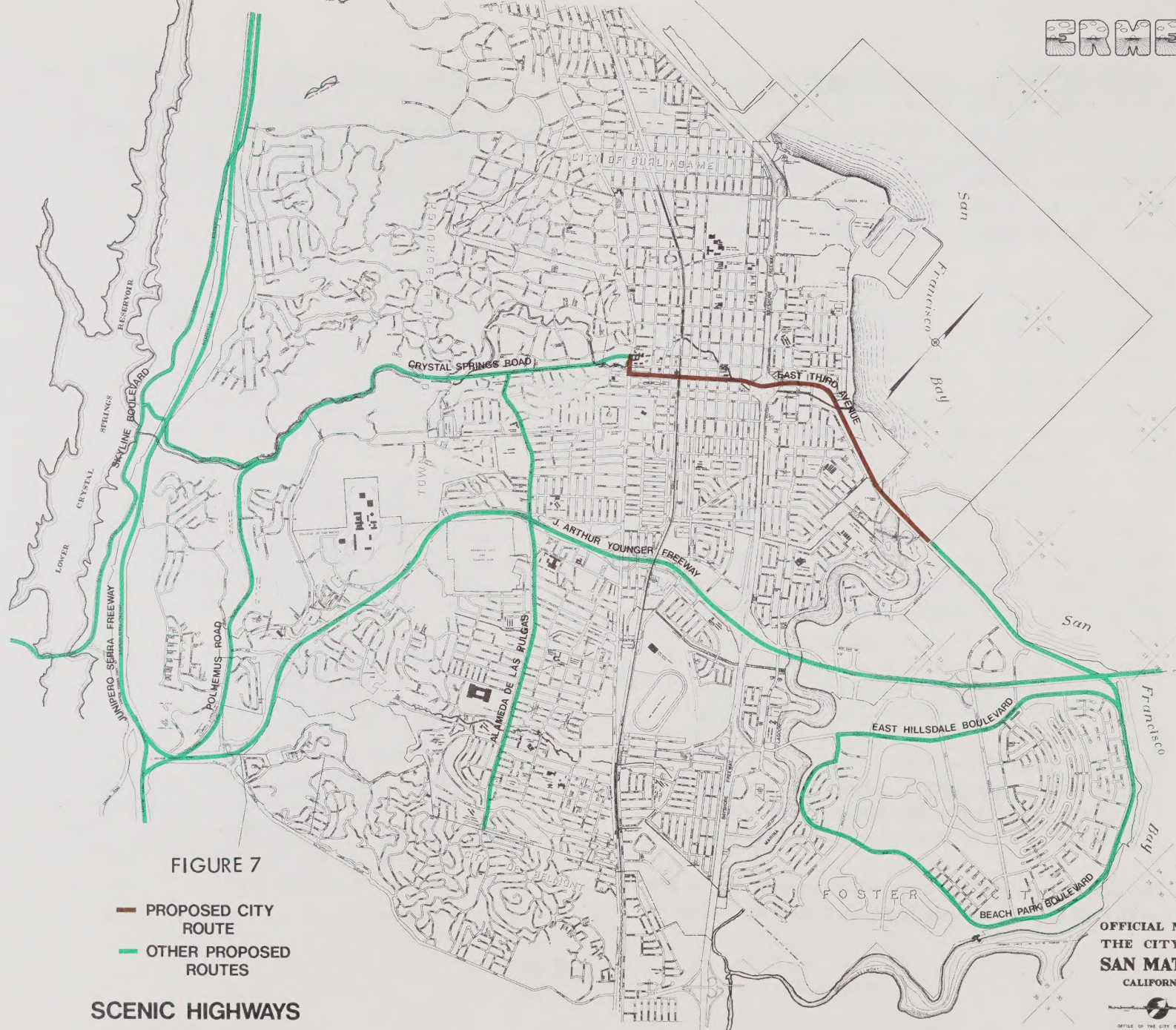
The City of San Mateo has jurisdiction over only a small portion of Crystal Springs Road, just west of El Camino

Real. Further west, the street forms the boundary between San Mateo and Hillsborough and finally through unincorporated parts of the County. Because Crystal Springs Road travels through very scenic areas, it has importance to San Mateo, even outside City limits.

2. Polhemus Road. Polhemus is very much like Crystal Springs Road, connecting that street with Ralston Avenue. Adjacent lands comprise the same steep hills, but also include commercial (Crystal Springs Shopping Center) and residential development. A good deal of this land is owned by the San Francisco Water Department and thus excluded from potential development.

Polhemus Road is in the County except for a very small stretch that traverses the City. However, San Mateo County Local Agency Formation Commission has declared the general area to be in the City's sphere of influence with at least portions subject to annexation.

3. J. Arthur Younger Freeway. Younger Freeway between El Camino and its westerly terminus, the Junipero Serra Freeway, offers a scenic ride with excellent views of the Bay, San Mateo, and San Francisco when traveling east, and the College of San Mateo, nearby wooded hillsides, and the Skyline Ridge when traveling west. Landscaping is extensive in the vicinity of the Alameda, indicating that a well-landscaped freeway can be attractive.



4. Alameda de las Pulgas. This street is rather unusual in the sense that it is an arterial street traveling through almost exclusively residential areas. The Alameda parallels El Camino a few blocks to the west. At one time it was a bypass when El Camino was flooded.

Over the years, the Alameda has been widened to four traffic lanes and two parking lanes. Widening resulted in a median landscaped strip, tree-lined sidewalks, and underground utilities.

The Alameda extends from Belmont to Hillsborough. Near Belmont, the Alameda increases in grade. From these hills, views of the City, the Bay, and surrounding cities in the distance are available. Along the way to its intersection with Crystal Springs Road, the traveler encounters several major buildings and landmarks. Beresford Park and recreation center is tastefully designed and blends in well with surrounding residential areas. The California Casualty Building located adjacent to the Younger Freeway and the Peninsula Golf and Country Club, is the sole office use along the Alameda. While the building may not satisfy everyone's taste, it does express a certain dignity in its concrete form. Further north, Aragon High School includes a fully mature stand of Eucalyptus. Crystal Springs Road, St. Bartholomew's architecture, stained-glass windows, and bell tower are outstanding.

Most of the lands adjacent to the Alameda have been developed. The most significant remaining vacant land is in the vicinity of Younger Freeway and Twentieth Avenue. Adjacent to the California Casualty building is a six acre vacant parcel of land. It gives a sense of size much greater than it is because it "blends" into the golf course

beyond its actual boundary. Near the Alameda and Twentieth Avenue are structures with landscaping and open space commensurate with their uses: Temple Beth El, Carey School, the Gardens Apartments, and Serra High School.

C. Scenic corridor

Achieving the purpose of a scenic road is typically done by designating a scenic corridor along the road and applying regulations within that corridor which are designed to protect and enhance its scenic quality. Scenic corridors need not be contiguous along a scenic road nor are they of uniform width. They may be extended no further than the boundary of the right-of-way or they may include considerable distances beyond the road. The continuity and width of the corridor is dependent on the road and the purpose to be achieved.

D. Possible alternative solutions

1. City/County program. The City and County of San Mateo will find it in their interest to designate scenic routes jointly. Other local scenic roads may then be designated to compliment the countywide system.

2. Regulation of land use. The intensity of buildings and the density of occupancy are determined by the types of land uses allowed. Application of proper land use principles that will not drastically change the corridor appearance may

do well to protect the scenic value of the roadway.

3. Scenic easements. The purchase of easements allows an area to remain open for either public use or nonuse. This does not necessarily entail acquisition in fee simple and therefore is often less costly. The purchase of scenic easements would be most useful along East Third Avenue where access to the Bay is of importance. In addition, it would protect the shoreline from development that may have an adverse effect on the scenic quality of the area.

4. Sign control. Sign restrictions pertain mostly to the control of outdoor advertising, such as billboards and the placement and size of signs attached to buildings.

5. Landscaping and design control. The type of landscaping proposed for a project should conform with existing landscaping or natural vegetation. As much as possible the disruption of existing trees and natural vegetation should be avoided. The height and overall appearance of a proposed project should be in conformance with others in the scenic corridor and should not deter from the roadway's scenic value in and around the corridor. A community design plan would establish policies that would be very helpful to the decision making bodies of the City.

6. Grading control. The control of grading would serve two purposes: 1) protection from landslides and mudslides and 2) preservation of the natural topography. The development of a slope district limiting proposed projects to slopes of certain angles measured in degrees would be the tool for implementation.

7. City entrances. A driver traveling along the

Peninsula has difficulty in differentiating one city from another. Through a scenic roadway program San Mateo could improve its entryways, thereby distinguishing it from neighboring cities.

8. Bike and equestrian paths. A scenic roadway should not be for motorists only. With the increasing interest in bicycling and horseback riding, some of the identified scenic roadways should incorporate bike paths and equestrian trails. The California Department of Transportation, identifies the Alameda as a potential bikeway and the upgrading of East Third Avenue could easily accommodate such an amenity.

2. HISTORICAL AND CULTURAL

A. Background

The City of San Mateo is both the oldest and the largest City in San Mateo County. From its humble beginning as a resting point between San Francisco and San Jose, the City has developed into a center for administrative and medical offices, retail trade, education, and religion.

The history of San Mateo may be divided into several eras: discovery, Mission days, rancheros, great estates, and urbanization. Each of these eras played a significant part in shaping the City. While sites dating back to the Costanoan Indian and Mission times have been discovered, most are not visible and few artifacts remain.

During the period of Mexican rule, the entire Peninsula was divided into extensive ranches. Portions of two ranches - Rancho de San Mateo and Rancho de las Pulgas - comprise the present City of San Mateo. Eventually the Mexican owners sold their land to wealthy San Francisco businessmen who established summer homes and farms in the "country" south of San Francisco. In this manner the era of great estates began.

After the railroad between San Francisco and San Jose was completed in 1863, Polhemus filed the first town plat which covered approximately 16 blocks around the depot (see Figure 8). The railroad made the elaborate country estates feasible and many wealthy families moved into the area. The Howards, the Parrotts, the Haywards, and others supplied the growing town with much of its economic life. Townspeople found employment by providing goods and performing services for the estate holders. By the turn of the century, however, most of the great estates ceased to be viable and their many acres were subdivided into tract homes. The 1906 San Francisco earthquake drove many people down the Peninsula, thereby augmenting the City's development.

Following World War II, the City entered a period of rapid urbanization. Numerous annexations occurred and the population increased spectacularly. Physical and economic development accelerated steadily and only now, as the City matures, has the pace begun to relax slightly.

Due to its central location, the City of San Mateo is the hub of a great deal of cultural activity. Although politically important, City boundaries mean little to those engaged in the creation and/or appreciation of the arts.

Cultured offerings throughout the County are accessible to San Mateo City residents and many countywide organizations have headquarters in San Mateo, such as the San Mateo County Arts Council and the San Mateo County Historical Museum.

B. Existing conditions (see Figure 9)

State historical landmarks. Two State Historical Landmarks are located in the City of San Mateo. In March, 1776, Father Pedro Font, Chaplain of the Anza Expedition, named San Mateo Creek. Anza campsite, adjacent to the Creek at Arroyo Court, is a designated Historical Landmark (map reference H-3). A second Historical Landmark is the site of "The Hospice", which was the farming outpost of Mission Dolores. This site, identified by a DAR plaque, is at the southwest corner of Baywood and El Camino Real (map reference H-4).

Other officially recognized sites. In addition to the two State Historical Landmarks, there exists numerous other historical sites that have received official recognition.

1. San Mateo House site. Two plaques, located on the public garage at Second and El Camino Real, commemorate the location of the hotel that served the Butterfield Overland Mail stages. Built in 1851 as the first business structure in San Mateo, it was demolished in 1964.

MAP OF THE TOWN OF SAN MATEO

SAN MATEO COUNTY, CAL.

As laid out by F. C. B. POLHEMUS, ESQ.
 Surveyed by Wm. J. Lewis, C.E. September 1862.

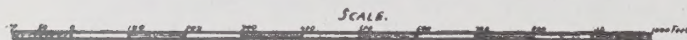
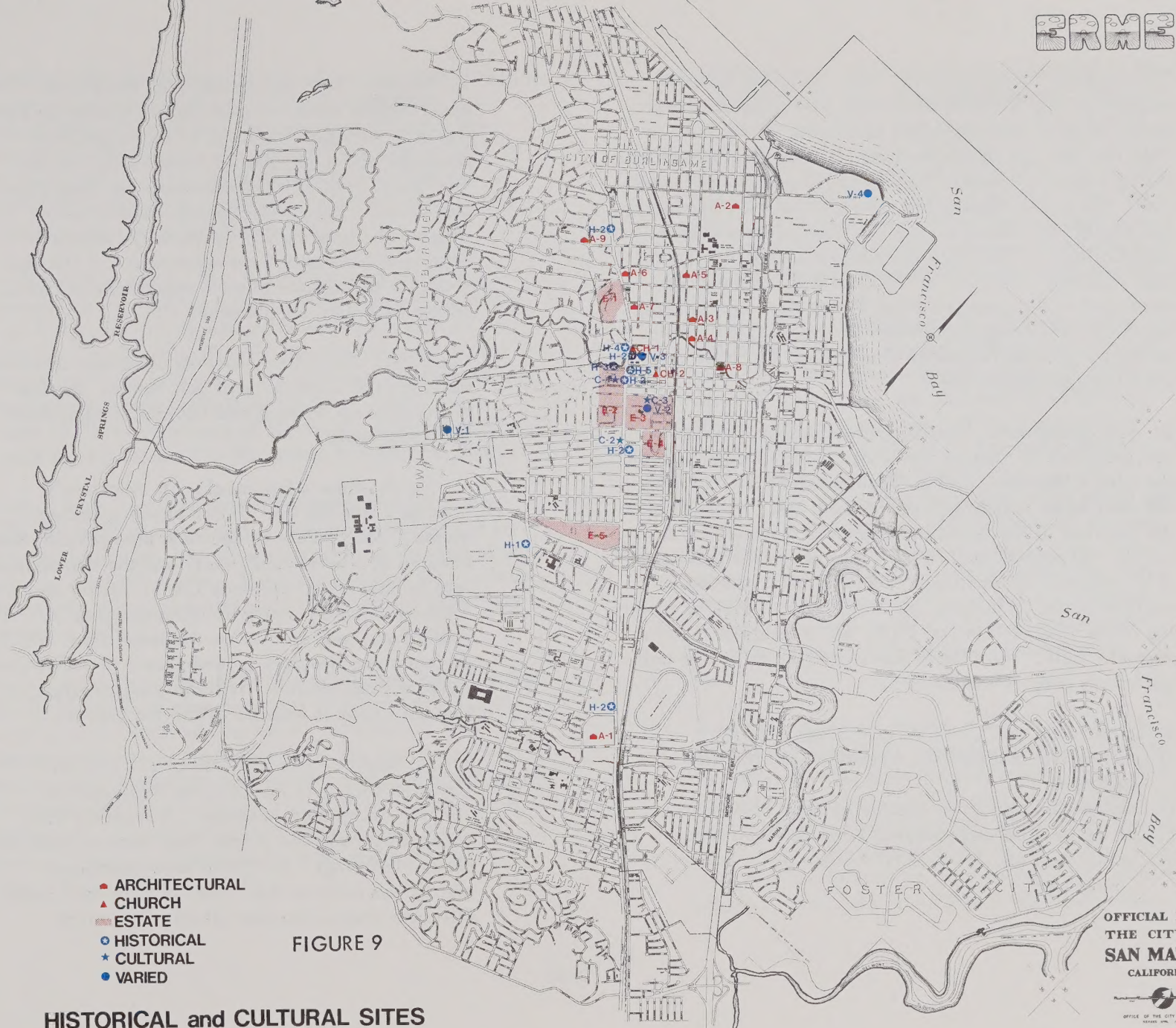


FIGURE 8



C. B. POLHEMUS

ALVINIA HAYWARD



- ▲ ARCHITECTURAL
- ▲ CHURCH
- ESTATE
- HISTORICAL
- ★ CULTURAL
- VARIED

FIGURE 9

HISTORICAL and CULTURAL SITES

OFFICIAL MAP
THE CITY OF
SAN MATEO
CALIFORNIA

2. Armitage Orphanage site. The California Casualty property on the Alameda contains a site recognized and preserved as a local historical landmark. It was here in 1864 that the San Mateo Institute, a "Boarding School for Young Ladies", opened. Later known variously as Laurel Hall, San Mateo Female Seminary, Laurel Hall Seminary, and Laurel Hall Institute, the facilities became Laurel Hall College in 1887, a private boy's school, and Laurel Hall Academy in 1890. In 1891 the original buildings were used as the premises of the Bishop Armitage Orphanage. The remaining cornerstone is from a building presented by Charles Templeton Crocker and his sister in 1905 (map reference, H-1).

3. Bell guideposts. Stretching from Mission Dolores in San Francisco to Mission San Diego along El Camino Real, the King's Highway, bell guideposts can be found. They are considered emblematic of the work and the intent of the founders of the missions. Each bell is made of iron, weighs 100 pounds, and rises 11 feet above the ground. It is customary for each bell to have plaque bearing an explanation of its purpose and two dates: 1769, the founding of the first mission and 1906, the erection of the first memorial bell. The City of San Mateo contains five bell guideposts (map reference H-2):

El Camino Real and Clark Drive (island)

El Camino Real and Baldwin Avenue by St. Matthew's Episcopal

El Camino Real and Third Avenue by Bank of America

El Camino Real between Hayward and Tenth Avenues

El Camino Real and Thirty-First Avenue by Hillsdale Center sign

4. Estates. Men and events from the era of great estates made the most lasting imprint on San Mateo. Although the lands of the original estates are now many smaller homesteads, the influence of the wealthy landowners has been a pervasive one. They were largely responsible for shaping the growing City physically, economically, and culturally (map references E-1 through E-5). A description of each estate can be found in the Technical Supplement.

Churches. Forty-four churches of various denominations exist in the City of San Mateo. Several are of cultural interest and two are of significant historical merit.

1. St. Matthew's Episcopal. St. Matthew's Episcopal was the first church building in San Mateo. The El Camino Real and Baldwin plot was donated by the Howard Family and the cornerstone laid in 1865 (map reference CH-1). After the 1906 earthquake, a new building designed by Willis Polk, was erected on the same site. The present stone structure is reminiscent of a Gothic-styled village church. William Davis Merry Howard's tomb is located within the church.

2. St. Matthew's Roman Catholic. The first Catholic church in the City was dedicated in 1875 by Archbishop Alemany. It stood on land donated by Polhemus across Third Avenue from the present buildings. In 1899 a more permanent church was built on the corner of Third and South Ellsworth (map reference CH-2). This brick

basilica, with dentil molding and narrow rounded windows, is capped by a square tower with Tuscan arches. The style is Roman Renaissance Revival, a style rarely seen west of the Mississippi. An iron bell was cast in 1861 in the San Francisco iron foundry of Peter Donahue's Union Iron Works. It later cracked and has since been donated to the County Historical Association.

St. John's Cemetery. St. John's Cemetery on Oregon Avenue was founded by John Parrott's widow (map reference V-1). On the agreement donating the land to the Catholic Church, Mrs. Parrott specified how the burial ground was to be laid out. One acre was set aside for the Parrott Family tomb, which was built in 1885. Every March 29, the anniversary of his death, a memorial mass is said for John Parrott in the Roman Renaissance Chapel.

Central Park. In 1922 the City purchased the 16 acre Kohl estate for use as a park. Located in the park is an iron dog sculpture, one of two that previously marked the entry to the Kohl estate. The stone and iron fence which borders the park was built by Captain Kohl in 1874 (map reference V-2).

Japanese Garden. San Mateo's magnificent Japanese Garden is the result of over two years of planning and hard work by dedicated local residents, particularly those of Japanese ancestry. Dedicated in 1966, the garden was designed by Nagao Sakurai, former landscape architect at the Imperial Palace in Tokyo. In 1968 the Tea House was dedicated. Garden enthusiasts proudly claim that San Mateo's Japanese Garden is the most authentic in the State. (map reference C-3).

Mills Hospital. Mills Hospital was founded in the early 1900's by Mrs. Elizabeth Reid, daughter of Darius Ogden Mills, as a memorial to her father. D. O. Mills, for whom Millbrae is named, and William C. Ralston opened the Bank of California in 1856. Originally known as the Red Cross Hospital, the name of the hospital was changed during World War I to avoid confusion. Little remains of the original structure (map reference V-3).

Coyote Point. Formerly an island separated by 0.3 miles of marsh, Coyote Point is now attached to the mainland (map reference V-4). It is believed that the name was derived from Cayetano Arenas, the original owner of the Mexican land grant Rancho de San Mateo. For many years the land was owned by the Howard Family, and Howard was responsible for filling in the marsh and having the area planted with Eucalyptus, Cypress, and Pine trees. A portion of Coyote Point, then under Federal ownership, was leased by the College of San Mateo in 1947. It was one of three campus sites used by the College of San Mateo for several years until the present campus was built.

Bank of America. Located at 300 S. El Camino Real is the Amadeo P. Giannini Memorial Branch of the Bank of America (map reference C-1). On the facade are mosaic murals by painter Louis Macouillard and mosaic master Alphonso Pardenas which depict the history of California along with that of Giannini and the Bank of America. Completed in 1963, the five 25 feet tall murals form

the second largest mosaic in the United States. Only the Stanford Chapel mosaic is larger.

Junipero Serra Statue. A redwood bust of Father Serra was placed on the Aragon Circle street island in 1969 by The San Mateo Club of Serra International, a Catholic organization (map reference C-2). Carved by sculptor Kenyon Kaiser, the work commemorates the contribution of Father Serra and the other Spanish padres to the development of California. It is reported to be one of the few Serra statues in the state and the only redwood-sculpture Serra Memorial in the United States.

Hillsdale shopping center. Constructed in stages between 1954 and 1967, the Hillsdale Shopping Center was the first center of its type on the Peninsula. Designed by Welton Beckett and Associates, the major portion of the center is built around an internal pedestrian mall. The Hillsdale development was a pioneer in the use of landscaped pedestrian mall, and many statues by the late sculptor Benjamin Bufano are permanently displayed here (map reference A-1).

Woodlake residential community. The Woodlake Apartments, built in 1965, represents one of the first and still one of the best Planned Unit Developments in the Bay Region. The large nearly 1,000 unit complex was designed by Worster, Bernardi and Emmons with Lawrence Halprin serving as landscape architect (map reference A-2).

Houses. Numerous Victorian-style houses are found in the older areas of the City of San Mateo. They represent a distinct era in the architectural development of the community. North Claremont and North Delaware,

between Monte Diablo and San Mateo Creek, is an especially important area in this regard and could be viewed as an historic district (map reference A-3). Several homes throughout the City have been singled out as architecturally important.

1. 2 North Delaware (1892). A board and shingle Queen Anne house with a tower, fishscale shingles, and Eastlake carving (map reference A-4).

2. 353 North Claremont (1895). Fishscale shingles, Eastlake brace, and detailed carving distinguish this Victorian cottage (map reference A-5).

3. 343 Highland (1880's). This wood house is late Greek Revival - early Victorian in style (map reference A-6).

4. 137 Elm (c. 1890). An unusual roofline, a fan set in the gable, and fishscale shingles are highlights of this two-story late Victorian whose original barn is still in the rear (map reference A-7).

5. 809 Lawrence (c. 1900). Of late Victorian persuasion, this wood house boasts a bracketed roof cornice, three-sided window bay, and windows (all double) with either arched or rounded moldings (map reference A-8).

6. 615 Hurlingham (c. 1906). This two-story

Colonial Revival house has classical embellishments, including a dentiled cornice, columned porch, and unique window treatment on the first floor (map reference A-9).

C. Problems and issues

San Mateo has some buildings, sites, and neighborhoods of particular interest or significance. Such areas contribute to the variety and vitality of the urban scene. They form an important part of the community's historic and cultural heritage which, if lost, cannot be replaced. This does not mean that any building must be saved simply because it is old nor that any site be maintained because it was once associated with some historic event. It does mean that the City, after making a thorough inventory of its resources, should take the necessary steps to preserve those buildings, sites, and areas that are found to contribute significantly to its physical and cultural heritage. What is only of "cultural" interest today may be of "historic" interest tomorrow. The story of a city is a story of continuity, growth, and change spanning various eras; it should not be considered as the story of a single isolated period.

The historical and cultural interest of the buildings and sites discussed under existing conditions are well acknowledged. There exists in the City of San Mateo, however, a second group of points of interest. In the second group can be found items which are not as well-known but which merit consideration when discussing the historical and cultural assets of the community. The list of sites mentioned here is not meant to be all-inclusive. At all times it is subject to reevaluation, additions, and deletions.

1. Seven Oaks - home of A. P. Giannini, founder of the Bank of America, 20 El Cerrito.

2. Gothic revival home with rare double gable, 40 Barneson (built in 1886).

3. Kirkbride home - home of C. N. Kirkbride; co-founder of the San Mateo Leader, the City's first paper, and first City Attorney; 360 Elm Street.

4. Victorian home on South Delaware - architecturally distinctive and not in the general area of other Victorian homes, possibly the oldest building in the City (built in 1874), 45 South Delaware.

5. Notre Dame Avenue - historically significant; from El Camino Real to Alameda de las Pulgas.

6. The Sentinal Redwoods - site of the twin log cabins, Boy Scout and Girl Scout; 300 block of Ellsworth Avenue.

7. Congregational Church - historically significant; Ellsworth and Tilton Avenues.

8. Roman Catholic Church - historically and architecturally significant; Third Avenue.

Determining significance of a site and evaluating the feasibility of preservation is a complex matter. Historic, architectural, and cultural considerations are used in singling out the more significant

sites. Once sites are specified, setting, uses, and cost considerations form the major preservation issues. Setting considerations such as visibility, accessibility and neighborhood importance, and the proximity of detrimental influences must be reviewed. Whether or not the site can be retained in its original or present use, or whether it is adaptable to other productive uses needs to be considered. Lastly, economic feasibility requires evaluation. Inventories of sites and analysis of their significance and preservation feasibility requires evaluation. Inventories of sites and analysis of their significance and preservation feasibility should remain open-ended so that new information and evaluations may be added.

D. Possible alternative solutions

Various tools are available for carrying out a program to conserve historical and cultural resources. Some are alternative methods, as in different approaches to zoning; some methods can be complementary, such as combining the techniques of zoning, renewal, and acquisition.

Both public and private resources must be utilized to successfully carry out a comprehensive program to conserve the community's historical and cultural heritage.

1. Public options

a. Zoning. When properly applied, conventional zoning can offer some protection to historic areas. Matters normally covered in the Zoning Ordinance do influence the character of an area. Conventional zoning, however, could not prevent an owner from making alterations, replacements, or additions which would destroy the historic

and/or architectural integrity of the site.

b. Flexible historical and cultural zoning. In a City like San Mateo, with a scarce and scattered historical and cultural heritage, flexibility in controls and public policy commitment are important to the success of any preservation program. Policy commitment can be achieved by the adoption of a zoning ordinance amendment which establishes the basic framework for designation of historic areas, standards for development and architectural controls, and a structure for administering these controls within historic districts. Such a "policy amendment" can provide a flexible framework within which potential historic districts can be reviewed.

c. Scenic easements. A scenic easement may be another tool for public control. It is a device that allows preservation of the public interest in the appearance of the building without substantially affecting the use of the property. The purpose is to prevent detrimental exterior alterations by acquiring an easement over the facade of the building, which does not allow the owner to alter the exterior appearance of the building without approval from a designated public agency. An advantage of the easement approach is that the building continues in productive private use. A disadvantage is that there is no protection against detrimental environmental influences from adjacent properties.

d. Urban renewal. A large number of the

architecturally and historically important structures are found in the older central portions of San Mateo. This area has become subject to deterioration and possible urban renewal treatment. Through urban renewal, blighting conditions in the vicinity can be removed. New uses can be returned to old areas and new construction can be related to old construction through appropriate aesthetic controls within renewal project areas. The Victorian homes in the vicinity of Claremont and Delaware could be retained and upgraded through conscientious urban renewal procedures.

e. Tax incentives. Some form of tax incentive is a possible device to encourage rehabilitation and preservation. Such incentives could take numerous forms: assessment or rate reduction, rate freeze, refund, and so on. The basic idea is to encourage the owner to restore and preserve the building by offsetting some of his improvement expenses with some type of tax relief.

f. Direct acquisition for public use. A public option to preserve selected important buildings and sites is direct acquisition, either by purchase or by condemnation. This should be considered when a significant site becomes available in a location appropriate to the performance of a public function or when this is the only chance remaining to save a truly outstanding resource.

2. Private options

a. Acquisitions for private use. Private sources can assist in finding appropriate re-uses for structures within any zoning restrictions that prevail. Possible uses abound and only require a little ingenuity.

b. Restrictive covenants. Restrictive covenants may be used to preserve certain characteristics of an area. The covenant runs with the land and binds owners and their successors to particular practices with respect to their property.

3. URBAN FORM

A. Background

Much of what makes San Mateo a desirable place to live and work in has to do with the shape and form of the City. The physical setting of the land and the manmade cityscape include characteristics which people desire in a quality living environment. The precise factors and their value which makes San Mateo a more desirable place than another are difficult to isolate, though important human needs which the community must supply to a greater or lesser degree include privacy, personal convenience, safety, sense of choice, and quality.

B. Existing situation

A principal function of any City is the provision of services and maintenance of regulations which allow residents the necessary sense of privacy, choice, safety, quality, and convenience. The discussion of this section is limited to the way in which City regulations affect the physical component of the community; and ways in which physical features contribute to human needs.

The personal sense of privacy, choice, and so on can be distinguished in terms of their manifestation as expressed in development of the City. The principal areas are building design, relationships between buildings and land uses, and amount and quality of City services.

1. Building design. While it does not state the intent beyond the general purpose, the Zoning Code attempts to provide for the privacy of residents and their compatible existence with neighbors and differing land uses. Minimum lot area and yard requirements result in the separation of buildings and sufficient open space to be usable by residents of dwellings.

In one apartment zone a specific open space requirement demands that usable open space be provided for the dwelling units. Other regulations of the Code intend to produce open space by reducing building coverage of the ground and by again providing usable open space. Performance standards require that potential nuisances such as noise be maintained on acceptable levels, lest adjacent residents or users of lands be inconvenienced.

The general review process in approving projects for development intends to ensure a high quality of development. Planned Development regulations give an applicant certain advantages if an application is pursued under its procedures. In return, a project must provide open space and is subject to detailed review to ensure that the features significant to the Planned Development regulations are provided.

The most recent regulations for executive zones contain a series of points which can be used by a builder to increase the scope of the project, if at the same time the project

offers one or more of several desirable amenities. These bonus features aim more at improved aesthetics and relationships between projects than at individual's privacy.

The purpose of the Subdivision and Site Development Code is the preservation of slopes and vegetation; both important to achieving privacy and safety as well as good relationships between structures.

2. Relationships. The City's zoning regulations aim at establishing compatible development in two ways. In one instance the Zoning Code separates uses to avoid incompatibility and create a reasonably structured land use pattern. In the second case the Code attempts to create desirable relationships where differing or the same or similar uses adjoin. Setbacks buffers, zoning transitions, etc. are tools the purpose of which is the harmonious coexistence of a multitude of structures and uses. Landscaping and tree preservation become an important factor.

3. City services. Two services of the City have a major impact on the physical aspects of the community -- streets, including street trees, and parks.

Streets consume a surprisingly large amount of any developed area. It is not unusual to find 25% of land devoted to rights-of-way in residential areas. In commercial areas, streets and related parking facilities can include a much greater

percentage of land.

The width of a street and its layout, street surface, and related landscaping, sidewalks, and lighting, have a major impact on the quality of an area. Residential streets wider than required for local traffic create asphalted space of little value. Streets without landscaping can be unattractive while tree-lined streets may be enjoyable.

Parks provide not only areas for recreational activity, they also tend to break up the asphalt and concrete developments that surround them. Furthermore, the more natural park areas provide habitat for wildlife.

San Mateo has some rather unique recreational facilities not often found in urban cities, albeit all are not City owned. Coyote Marina, presently under expansion, the Bay Meadows race track, the San Mateo County Fairgrounds, and the three golf courses, (San Mateo Municipal Golf Course, Bay Meadows, and Peninsula Golf and Country Club) offer recreation that is not commonly found in most parts of the Bay area. These facilities attract people from outside the City, vis-a-vis local parks that generally attract City residents only.

Park and recreation facilities within and around San Mateo fall under three major categories: 1) City owned park and recreation facilities; 2) school facilities; and 3) non-City owned park and recreation facilities, such as planned developments, golf courses, and county facilities (Figure 10). City owned parks comprise three types: 1) neighborhood parks ranging in size from 1-12 acres; 2) community parks, 10-30 acres; and 3) citywide parks over 30 acres. The City has 204.7 acres of park space that generally

meets this criteria. The breakdown is as follows: neighborhood, 60.7 acres; community, 62 acres; and citywide, 82 acres. These figures recognize 25% of Marina Lagoon as recreational value. The Technical Supplement identifies adopted park standards.

School facilities total 166 acres; recreational facilities in planned developments 128 acres; golf courses and race track, 173 acres; and County facilities, 228 acres; totalling 695 acres. Add to this the 204.7 acres of City owned facilities plus the 103 acre San Mateo Municipal Golf Course.

In total, 1,002 acres of park and recreation facilities exist in and near the City limits. However, this figure is deceiving for the following reasons: 1) The above figure for City owned facilities does not reflect the actual serviceability of the facilities. Approximately 40% of existing parks are either undeveloped or are in need of major improvements. 2) Recreation spaces at schools are also not totally adequate and would require some upgrading of facilities before they would be fully serviceable. Schools and other recreational areas are not totally open to the public as are City parks. 3) Recreational facilities of planned developments are open to residents of the development and their guests only. The general public is not allowed to use the facilities. 4) Golf courses, of which there are three -- two private, one public -- serve the golf enthusiast for a slight fee. Bay Meadows race track attracts

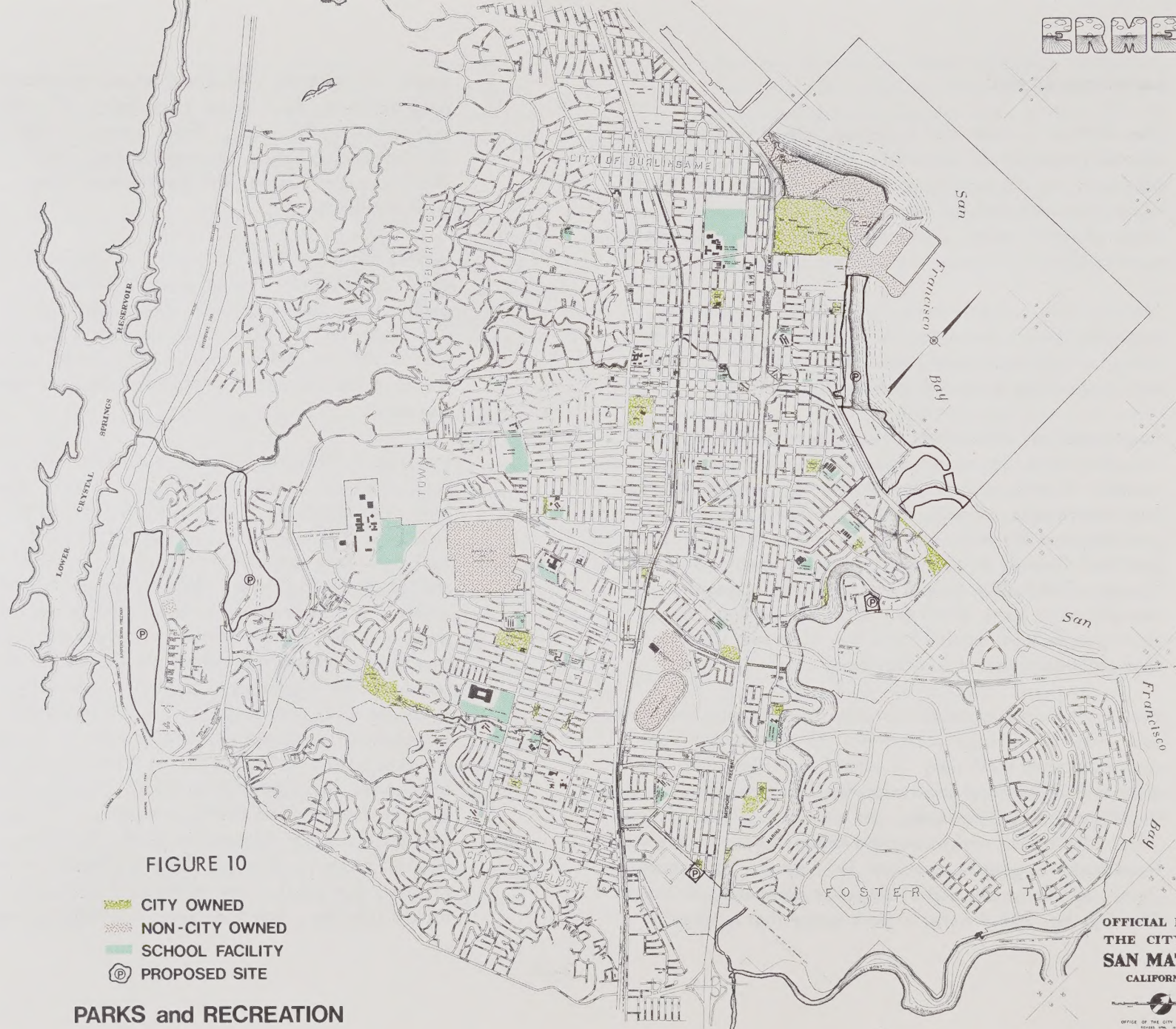


FIGURE 10

- CITY OWNED
- NON-CITY OWNED
- SCHOOL FACILITY
- P PROPOSED SITE

PARKS and RECREATION

OFFICIAL MAP
THE CITY OF
SAN MATEO
CALIFORNIA

horseracing people and has an admission charge. County facilities comprise the fairgrounds, open by admission only during special events, and Coyote Point and Coyote Marina -- the latter serving boating interests only. In essence, there are only about 204 acres of park space that are readily available to the public.

The City's goal is 10 acres of park and recreation space per 1,000 population. The above City-owned park inventory represents only 2.6 acres per 1,000 population. This indicates a 74% deficiency in park facilities. However, including Coyote Point in the inventory of parks, park-land deficiency decreases to 56%. Proposed park and recreation sites total over 200 acres.

Vacant land in the City is both scarce and expensive. Unfortunately, fiscal resources will limit the acquisition and development of parks and recreation spaces. This combination makes it imperative that existing resources such as school grounds, not be transformed into other than recreation uses and that alternative park development and acquisition approaches be pursued.

C. Possible alternative solutions

A number of steps can be taken to ensure that the City's regulations and facilities enhance the desirable qualities of a community:

1. Review the Zoning Code to establish that sufficient open space requirements exist in the various zones, and that compatibility and transition requirements are sufficient to effect the purpose of the Code.

2. Examine City services and facilities so that criteria can be established to enhance the quality of the community character beyond the fulfillment of their primary functions.

IV. URBAN DEVELOPMENT CONSTRAINTS

INTRODUCTION

This section of the Element discusses four topics, the subjects of which may impose certain standards on land development -- seismic safety, noise, general safety, and energy conservation. The extent to which these factors may affect development depends on the extent to which the City wishes to go in reducing the hazards posed by the subjects.

CONCEPT OF RISK

In an attempt to give guidance to cities, the Council of Intergovernmental Relations (CIR) has composed guidelines which cities may use in preparing required elements. CIR has attempted to put the matter of minimizing hazards resulting from earthquakes and other geologic hazards such as landsliding and flooding in the concept of "acceptable risk." While this concept seems somewhat abstract, it is one which is frequently used implicitly, and is useful for rational analysis of possible programs. It applies naturally to seismic and general safety and can be applied to noise and energy if excessive noise or waste of energy is considered a "hazard."

The concept of acceptable risk is defined by CIR

as the level of risk below which no specific action by local government is deemed necessary, (other than making the risk known and suggesting remedial measures for the public to take if they desire on their own to lessen the risk). In more general terms the concept means that local government must come to a conclusion concerning the efforts which should be made to reduce a certain hazard. The extent of the effort is typically measured by the expenditure of public funds. By way of local example, San Mateo has for years had an established level of risk as far as flooding from heavy rains is concerned. This level does not allow for periodic flooding of areas in the City. The City has by its actions indicated that the acceptable level of risk (of flooding) is extremely low. The City has been willing to take the action of dredging the lagoon, improvement of drainage channels, installation of pumps, etc. and incur the expense of sometimes large amounts of money, to achieve this low level of risk. While this City program does not preclude flooding during the "100 year storm," it definitely lessens that hazard and avoids hazards of storms of lesser intensity.

A similar approach can be taken concerning earthquake hazards. While it cannot be determined when and where an earthquake will occur, or its intensity, there are many actions which a City can implement to reduce the damage when it occurs, and to allow for rapid recovery. It is the purpose of the ERME to sort out the various options open to San Mateo and begin to determine what costs the City is willing to incur to reduce earthquake and other geologic hazards.

Public Role

A local government's responsibility in determining acceptable risk is significant. City government is the general governmental unit most directly involved with the welfare of its citizens. Typically residents of a community assume that the local government is safeguarding people's lives and property. Individuals make many decisions concerning risks knowing the dangers and the reward. The proverbial example is the automobile. Individuals make a decision daily to drive their cars of necessity or for pleasure and risk the small danger of being involved in an accident. But this example points out the role of collective action based on accepted ground rules. Similarly, local government has a role in minimizing seismic and geologic hazards. The probability of hazards, the specific hazards, and mitigating measures are not typically the subject matter with which individuals deal every day. It is the kind of concern one typically leaves to one's local government.

While it could be argued that individuals could make their choices based on their own determination of acceptable risk if only they had full knowledge of the hazards, this alone does not appear to be a practical solution. The risks as described in the safety, seismic safety, noise, and energy sections are those which must be responded to collectively, via governmental levels.

1. SEISMIC SAFETY

A. Background

The Seismic Safety section of the ERME is designed to incorporate a consideration of seismic hazards into the development of San Mateo. The basic objective is to reduce loss of life, injuries, damage to property, and economic and social dislocations resulting from future earthquakes. Consistent with State Law, this section deals with an identification and appraisal of seismic hazards, such as susceptibility to surface ruptures from faulting, to ground shaking, ground failures, and to effects of seismically induced waves, such as tsunamis and seiches.

In addition to the above, this section includes an appraisal of mudslides, landslides, and slope stability as geologic hazards that must be considered with other hazards such as possible surface ruptures from faulting, ground shaking, ground failure, and seismically induced waves.

Seismicity. The San Francisco Peninsula has a long history of earthquake activity. Evidence indicates that for millions of years before man's arrival here, large scale earthquakes have shaken this area. While efforts are underway to develop methods for forecasting seismic activity, at the present time the only basis for predicting the frequency and magnitude of future earthquakes are the historical accounts of recent seismic activity. Earthquake frequency predictions based on such a short period of geologic time should be considered very approximate and may be used only to obtain a feel for the seismicity of an area.

The City of San Mateo lies immediately adjacent to and east of the San Andreas fault. In the Peninsula area, the San Andreas fault tends to produce relatively infrequent, but severe earthquakes. Another major fault affecting San Mateo is the Hayward fault. Although this fault lies 15 miles to the east of San Mateo, a major earthquake centered in the Hayward area could cause substantial damage in San Mateo.

Historic movements on the San Andreas and Hayward faults indicate that San Mateo can expect a maximum intensity earthquake (Mercalli X or greater), once every 100 years and a damaging earthquake (Mercalli VI or greater) 3-4 times per century. For a description of the Mercalli scale, see the Technical Supplement. The importance of these frequency estimates suggests that the great majority of structures within San Mateo today will most probably be subjected to an earthquake capable of causing substantial damage.

B. Seismically induced geologic hazards

Major earthquakes generate a wide variety of damaging events all of which effect San Mateo to a greater or lesser degree. A great deal of the loss of life and property damage generally associated with earthquakes is avoidable when the nature of the hazard is understood and proper engineering and land use techniques are applied. It is therefore, the intent of this section to identify and evaluate the nature and extent of natural seismic hazards in San Mateo.

Hazard evaluation. The evaluation of earthquake related hazards requires an examination of the following questions:

1. How often will earthquakes occur?
2. How large will they be?
3. What effects will they have?
4. What mitigating measures are available and what is their expected cost?

The specific natural earthquake hazards affecting San Mateo are as follows:

1. Ground shaking.
2. Ground failure, i.e., liquefaction, lurch cracking, lateral spreading, landsliding, and differential settlement.
3. Flooding due to dam or dike failure.
4. Flooding due to tsunamis or seiches.
5. Ground rupture due to faulting.

The degree of hazard presented by the above is strongly related to the strength and thickness of the various earth and bedrock materials which underlie the City. The Technical Supplement contains background information on the geologic history and setting of San Mateo.

Susceptability to surface rupture by faulting. Review of existing U.S. Geologic Survey and California Division of Mines and Geology maps indicates that there are no known active faults traversing San Mateo. However, this does not exclude the possibility that active faults do exist within the City. Large earthquakes are frequently accompanied by minor movements on smaller faults in sympathy with the main fault movement. These minor offsets are nearly impossible to predict and therefore constitute an

unappraisable hazard. Future earthquakes and geological studies may reveal such faulting, thus enabling a more complete evaluation of the hazard.

C. Geologic zones

The geology of a region strongly effects the type and magnitude of seismic hazards. San Mateo can be divided into three generalized areas based on its geology. Figure 11 delineates these generalized areas referred to here as the bayland area, the central alluvial area, and the bedrock area.

1. The baylands area. Throughout the eastern portions of San Mateo, land fill is underlain by varying thicknesses of compressible, low strength bay muds. Beneath the bay muds a thick layer of alluvial deposits is found. The alluvial deposits are in turn underlain by bedrock. This geologic profile has a substantial history of poor performance during seismic events. In order to precisely predict how a bay muds land fill area will react during an earthquake, a great deal of specific information is needed. This type of information is not currently available for the San Mateo area. However, existing data does allow for some generalized statements as to how the eastern bay muds area would probably react in a major earthquake. As additional information becomes available, a more specific evaluation will be possible. Seismic hazards active within this area are discussed below.

Ground shaking: Saturated alluvial and bay mud deposits tend to amplify earthquake waves. Because

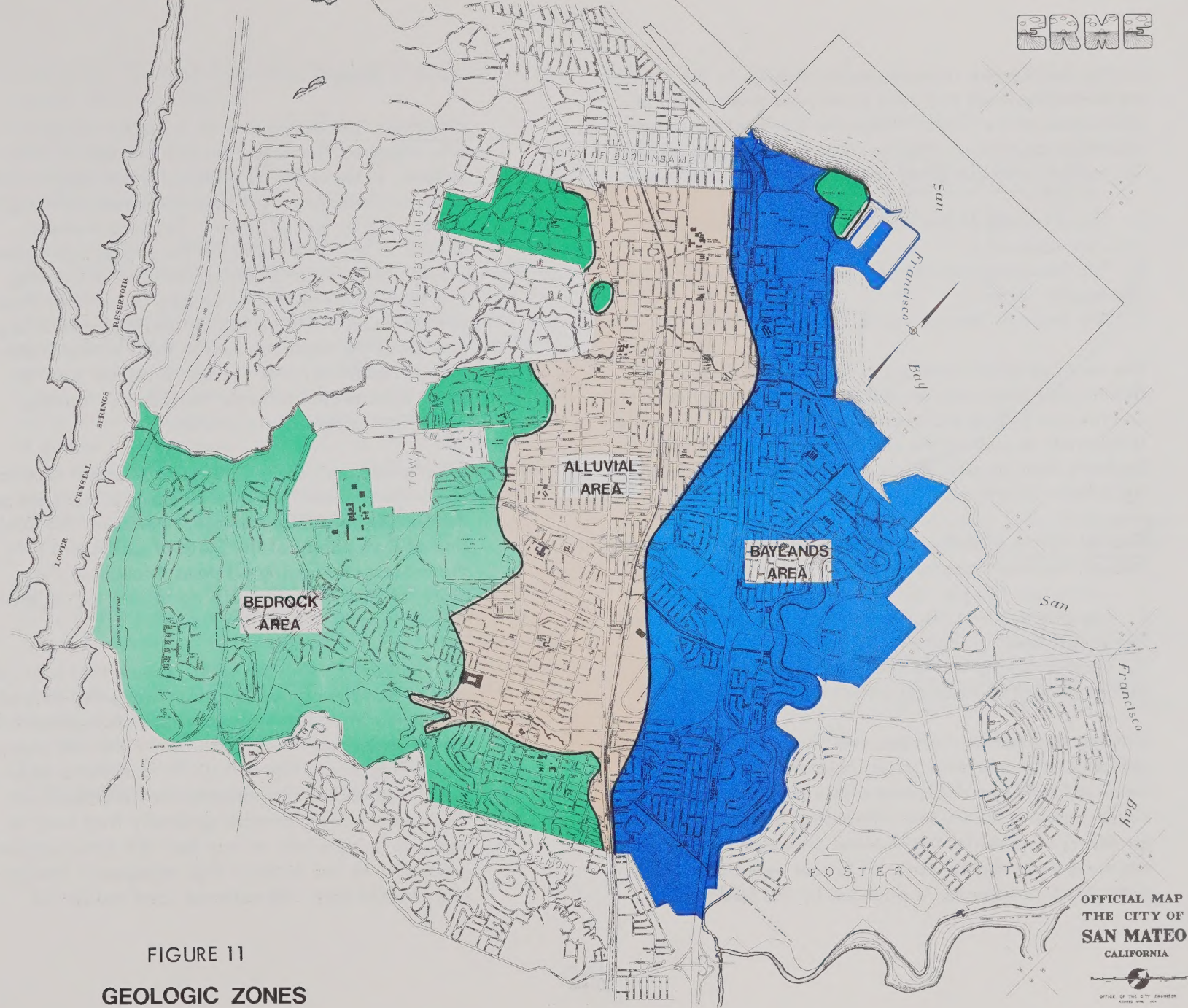


FIGURE 11
GEOLOGIC ZONES

of this, earthquake induced ground shaking in San Mateo's reclaimed baylands will tend to be more severe than in other areas of the City. Within the baylands area considerable variation in shaking intensity can be expected. The factors affecting these variations are the following:

1. The thickness of bay mud and other unconsolidated alluvial materials.
2. The frequency content and magnitude of the arriving earthquake waves.
3. The shape of the underlying bedrock surface.

The result of ground shaking in the baylands is that tall flexible structures will be shaken more severely than one and two-story rigid structures. In this respect, San Mateo is fortunate as most of the current development within the baylands area consists of low density one and two-story rigid frame structures.

Ground failure: Earthquake shaking causes ground failure through two basic mechanisms:

1. Liquefaction and resulting differential settlement and loss of soil bearing capacity.
2. Lurch cracking and lateral spreading resulting in failure through differential settlement.

Existing information indicates that the baylands area would probably not experience large scale liquefaction. But localized sand and silt layers within bay muds may liquefy causing ground failure and differential settlement. Lateral spreading of cohesive fine grained sediments and lurch cracking are probable modes of failure especially where a direction for expansion is provided by the free face of a

creek or slough.

Flooding: The baylands area is subject to seismically triggered flooding from four sources: 1) dike failure, 2) tsunamis, 3) seiches, and 4) dam failure. None of these sources is likely to cause flooding in excess of five feet of water. The long shallow stretch of bay water lying to the east of San Mateo provides considerable protection against flooding due to tsunamis or seiches as long as bayfront dikes remain intact. A dike failure would expose a large portion of the baylands area to tidal action flooding. In addition, if a tsunami or seiche were to strike after a dike failure, the scope of flooding would be temporarily increased.

Insufficient information is available at this time to assess the probability of the Crystal Springs Dam or the San Andreas Dam failings. However, the Division of Dam Safety of the State of California is in the process of studying all dams throughout the State for their susceptibility to failure during seismic activity.

2. The central alluvial area. The central alluvial area of San Mateo consists of an elongated strip of land whose irregular boundaries are approximated by the Southern Pacific Railroad tracks and the Alameda de las Pulgas (see Figure 11). Within this area alluvial and colluvial sediments overlie bedrock in thicknesses which increase generally from west to east. It is important to note that this area contains a majority of San Mateo's high occupancy commercial, health care, educational, and residential

structures. The specific seismic hazards active within the central alluvial area are:

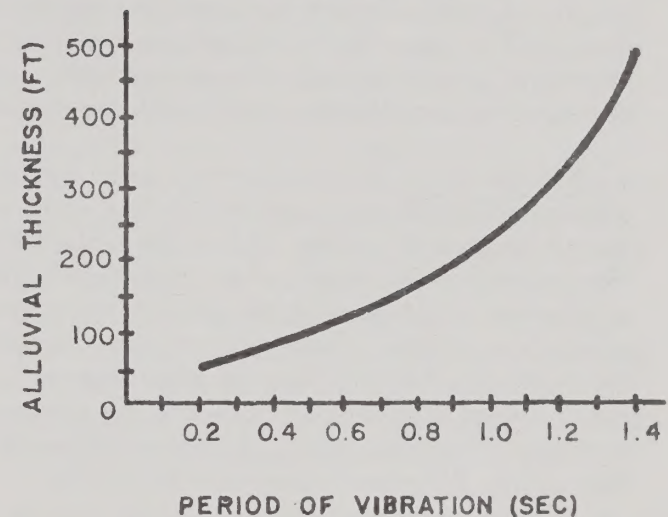
1. Ground shaking.
2. Flooding due to dam failure.
3. Ground failure.

Ground shaking: Within the central alluvial area the most widespread affect of an earthquake will be ground shaking. The presence of various thicknesses of alluvial soils is likely to cause selective amplification of earthquake waves (see Figure 12). Structures of all types, if inadequately constructed or designed to withstand the shaking forces, may suffer damage or collapse. Estimates of the dollar value of damage to woodframe structures as a result of ground shaking alone are as high as 5% of the dollar value exposed. It is probable that within the central alluvial area damage caused by ground shaking will exceed all other direct earthquake damage by a factor of 10 or more.

Flooding: Seismically triggered flooding within the central alluvial area is restricted in cause to the failure of man-made water-retaining structures. Crystal Springs Dam, San Andreas Dam, and Laurel Creek Dam are the principle structures capable of causing flooding. The potential flood plains for total failure of Crystal Springs and San Andreas Dams are shown in the Technical Supplement. The location, design, and use of Laurel Creek Dam virtually eliminates it as a seismic hazard.

FIGURE 12

RELATIONSHIP BETWEEN DEPTH TO
BEDROCK AND EARTHQUAKE WAVE
AMPLIFICATION



SOURCE: Based on H. B. Seed and P. B. Schnabel, 1972, Soil and geologic effects on site response during earthquakes, in Proceedings of the International Conference on Microzonation for Safer Construction, p. 85.

Ground failure: Most of the sub-surface materials in the Central alluvial area are dense gravels, sands, silts, and clays. The highly consolidated nature of these materials serves to greatly increase their strength thus reducing the hazard of ground failure. However, the processes involved in the various seismic ground failure mechanisms are complex and the possibility of such a failure occurring in saturated alluvium can never be totally discounted. Thus, soils and geologic investigations should address the problem of ground failure whenever saturated, loosely or moderated consolidated alluvial soils are encountered.

3. Bedrock area. The western hills area contains those portions of San Mateo where bedrock lies within a few feet of the ground surface. It does not include those portions of western San Mateo where considerable thicknesses of alluvium or fill material has been placed in stream channels or valleys. Such areas are more correctly evaluated under the heading "Central Alluvial Area". The specific seismic hazards active within the western hills area are: 1) ground shaking, 2) ground failure due to landsliding, 3) ground rupture due to faulting.

Ground shaking: As in other areas of the City, ground shaking remains the principle source of potential earthquake damage. However, the bedrock materials of the western hills tend to react more favorably to seismic shaking than alluvial or bay mud deposits. Bedrock materials do not exhibit the tendency of alluvial and bay mud deposits to amplify earthquake waves. Thus, a condition of resonance is easily avoided for taller structures, conversely, one and two story rigid buildings may be subject to greater shaking damage, due to their short fundamental period of vibration. However, historical accounts of the

1906 San Francisco earthquake indicate that damage from shaking was generally less in the western hills than in the alluvial and bay mud areas even though the hills are closer to the causative fault.

Ground failure: Landsliding in the western hills area would probably account for less than 10% of the total damage incurred by San Mateo during a major earthquake. Most of the natural hillsides of western San Mateo are in relatively stable state. However, many of the altered regraded cut and fill slopes could undergo slippage during a seismic event, especially if the earthquake occurred during the wet winter months. The current design of cut and fill slopes does not generally take into account seismic loads. Thus, substantial failures in such slopes (especially where minor static slippage is already evident) seems probable.

D. Possible alternative solutions

1. Contingency emergency plans. Most effective and desirable is the preparation of contingency plans to deal with disasters such as an earthquake as they occur. The purpose is to minimize loss of life after a disaster and allow quick and effective recovery.

2. Increased knowledge of hazards. Programs to gain more information about the nature of the hazard as well as its meaning for particular sites or areas are necessary for the development of programs to eliminate hazards. This measure is a groundwork necessary for the development of these other programs.

3. Mitigating project measures. When certain physical hazards become evident, and their abatement is desired, the City may propose specific actions to be taken, such as reinforcing dikes. Such programs may be preventive or retroactively "curative" and effective. They also tend to affect specific areas where the problem occurs and therefore are not citywide in effect.

4. Mitigating program measures. While mitigating project measures are direct actions taken by the municipality to reduce a specific hazard, mitigating program measures are actions through which the City causes private owners of properties and buildings to reduce specific hazards.

5. Preventive planning actions. These actions generally deal with changes to codes and regulations to take risk reduction into account. They generally affect only future development and their effectiveness is long range.

2. STRUCTURAL HAZARDS

A. Background

The most usual and damaging occurrence during an earthquake is groundshaking. Vibrations in the ground are transmitted to structures which react to the shaking depending on the type of construction and soil condition.

How well a structure will withstand an earthquake depends on the severity of the shake and the building's construction and the soil upon which it is placed. Over the years, construction methods have changed to where seismic considerations are an important factor in building design.

B. San Mateo history

Different types of buildings have different resistance to earthquakes. In general, wood frame structures are considered among the safer types of buildings (although appendages such as improperly reinforced brick chimneys may be dangerous.) The types of structures which pose a special hazard in San Mateo are those built of masonry in the early years of the century--the early commercial buildings (which are concentrated in a few areas). The reasons for their particular lack of safety are several. They were not reinforced and were designed to simply stand up, but not to take a lateral load. In other words, they were stable and solid because the supports (walls, columns) were well able to hold up any load placed upon them. The earthquake motion, however, has the effect of pushing a building from the side, i.e. lateral force. It was not until the 1930's that consideration of lateral forces were incorporated in building codes.

Another factor which aggravates the problem of old structures is that many were constructed with mortar which contained lime. A particular attribute of that mortar is that it disintegrates with age, so that many brick walls may have lost a considerable percentage of their strength.

The architectural design habits of the old days included many parapets and other appendages as well, which are susceptible to being shaken loose during an earthquake, thus adding another hazard to already hazardous structures.

The buildings which warrant the greatest concern were built prior to the mid-1930's . In 1933, largely as a result of the Long Beach earthquake, new building codes were written which included seismic considerations, such as lateral loading. Schools were called out as particularly significant and were required by the Field Act to be earthquake safe. New construction methods including light-weight but strong plywood also became available.

A significant factor in improving construction in the City became the expertise of the building department personnel. During the first two decades of this century, building inspector was only one of several hats the responsible individual may have worn. During the 1930's the pace of building increased and building inspection became a more important function. This trend continued into the 1940's and 1950's. Additional personnel were added to the Building Department during the later 1940's; major seismic considerations were incorporated in the 1943 Uniform Building Code (UBC). The Building Code became more sophisticated and building inspection personnel became more and more experienced in the enforcement of codes.

Another major change in construction occurred in the early 1960's when the modern high-rise building was introduced in San Mateo. The Bank of California building introduced this type of construction which has come into increasing use. The 1973 UBC subjects such construction to special requirements and it is likely that seismic safety will become an increasingly emphasized aspect of the Building Code.

C. Areas of concern

Because potentially unsafe structures were built around the same time, the problem is localized and relatively easily identified. An old map of the City gives an immediate clue about where to look. Downtown San Mateo includes the vast majority of these buildings. Lesser concentrations may be found along El Camino Real. Old masonry buildings are an exception elsewhere.

D. Possible program of solution

The problem of dangerous buildings is generally dealt with through a process which eliminates the hazard of dangerous buildings to a greater or lesser extent. The concept of "acceptable risk", discussed elsewhere in this element, is the basis for determining the extent of the program. In its simplest form, a dangerous building program would intend to remove dangerous parapets, cornices, and other projections and identify those structures which are totally unsafe. The model Dangerous Building Code developed by the International Conference of Building Officials, could provide the legal impetus to a dangerous building program. Such a program could be carried out by the Building Division of the Community Development Department. A building inspector with special expertise inspects designated sections of the City. A preliminary survey would indicate the dimension of the problem. The cursory overview would then be followed up by inspection of structures. The extent of the inspection depends upon the significance of the structure and

on the deficiencies encountered. The first factor is important. It is more important to make a building safe when the building is one which has a high occupancy, than a building which has few occupants.

Following inspection and evaluation of a structure, the owner would be asked to make repairs to cause the structure to achieve an established safety level. Building inspection would follow the action through until compliance is reached or the nuisance is abated. The length of time which such a dangerous building program may take depends on the acceptable level of risk desired by the City and on the resources allocated to it.

2. NOISE

A. Background

Noise is a form of environmental pollution which can directly affect the quality of life. Historically, noise has been considered an unpleasant but inevitable part of urban growth and development; however, noise control measures are available to reduce or prevent high levels of noise exposure. They have proven successful in communities where there was governmental and citizen concern about the noise problem.

Noise can be most simply defined as unwanted sound. The degree of annoyance from sound is subjective. What might be music to one person may be irritating noise to another. The time of occurrence also affects the degree of annoyance. A dog barking at three o'clock in the afternoon is less annoying than one barking at three o'clock in the morning. The various noise impacts may include the

following:

1. Psychological effects of annoyance, fear, interference with work, disruption of sleep and rest;
2. Physiological effects of hearing loss (temporary or permanent), aural pain, nausea, loss of muscular control, blurring of vision;
3. Social effects of interference with speech and communication; and
4. Economic effects of reducing property values and levels of productivity.

This noise section includes noise contours of estimated present and projected noise levels. A noise level is a measurement of sound pressure with a level expressed in decibels. When a sound level meter is used, sound pressure level can be determined and expressed in decibels, (dB). In this case, the decibel is a logarithmic value which is referenced to the faintest sound pressure detectable by the human ear.

The decibel values, dB(A) or dBA, are for those sound levels measured using the A weighting network of a standardized sound level meter. The human ear can hear frequencies from about 20 to 20,000 cycles per second. But it cannot hear all pitches equally well. When modified by an A - weighting, the decibel value dBA corresponds more closely to how the human ear perceives the noise.

The noise contour is a line on a map passing through points where the same sound pressure level prevails. Contours form bands of varying width emanating

from a noise source.

The noise exposure level, as used in this report, is generally a combination of a noise level in A-weighted decibels and a time duration for that noise level. For example, an "L90" designation indicates a sound pressure level that is exceeded 90% of the time. The "L90" designation is sometimes used to determine the ambient or background noise exposure level.

Because of their logarithmic nature, decibel units cannot be directly added or subtracted. Adding 50 dBA to 50 dBA does not give 100 dBA, rather it gives 53 dBA. Doubling the sound power always causes the decibels to increase by 3. For example, two identical cars make 3 dB more sound than one car; four identical cars make 6 dB more than one car; and eight identical cars make 9 dB more than one car.

People do not perceive noise in direct proportion to sound level. A 3 dBA change in sound level is just perceptible to an average person. A 5 dBA change in sound level is a clearly noticeable change in apparent loudness. A 10 dBA change is perceived as sounding twice as loud (or half as loud). For example, 60 dBA is approximately twice as loud as 50 dBA, while 70 dBA is approximately four times as loud as 50 dBA.

A noise problem usually consists of three distinct parts: a source, a path, and a receiver. To abate the problem, one or more parts have to be controlled. The ways to control each part are discussed later in this report.

B. Major noise sources

The major noise sources can be divided into three basic groups: transportation related sources; construction related sources; and site and social related sources. Of these three groups, the transportation related sources affect the most people. The transportation related sources include: motor vehicles (cars, trucks, and motorcycles), highways and major arterials; aircraft and aircraft paths; and trains and train tracks.

Trucks and tractor trailers comprise the greatest noise source of the motor vehicles. The average heavy truck cruising at 45 mph produces about 86 dBA at 50 feet, although levels above 94 dBA are common. A three to five percent upgrade in the highway produces 2 dBA more than on a level road. Acceleration on a level road produces 5 dBA more than steady running conditions.

The average noise level of passenger cars traveling at 35 mph produce less than 86 dBA at 50 feet. A decrease in the average noise level of passenger cars has occurred in recent years.

Motorcycles and sports cars can be as noisy as trucks and are often judged by the public to be more annoying. As with cars and trucks, motorcycles and sports cars generate significantly higher noise levels during acceleration than while maintaining a steady speed.

To estimate existing noise levels and to predict

future noise levels along the major roads, the California Department of Transportation (Cal Trans) has estimated noise contours along Highway 101 (Bayshore Freeway), Highway 92 (J. Arthur Younger Freeway), and Highway 82 (El Camino Real). The City has estimated existing and predicted noise contours along the six heaviest traveled streets. The following list indicates the streets, or sections of streets, for which estimates were made:

1. Alameda de las Pulgas
2. Delaware Street - Poplar Avenue to 10th Avenue; 16th Avenue to 25th Avenue
3. East Third Avenue - "B" Street to Foster City Boulevard.
4. Hillsdale Boulevard - 19th Avenue to the College of San Mateo; Alameda de las Pulgas to Foster City Boulevard
5. Peninsula Avenue
6. San Mateo Drive - Peninsula Avenue to Baldwin Drive

These contours were determined by Federally approved methods found in the National Cooperative Highway Research Program, Report No. 117. The contours are shown in ^L10 designations ± 3 dBA on the Noise Contour Maps (Figures 13-16).

Noise contours for aircraft from San Francisco International Airport and San Carlos Airport have been prepared by the San Mateo County Airport Land Use Commission. These contours are given in Community Noise Equivalent Level (CNEL) values on the Noise Contour Maps (Figure 13). The CNEL values are determined from numerous factors such as flight path, time of day, aircraft type, and number of operations.

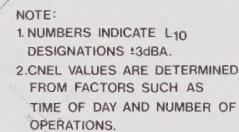
Trains and train tracks are another significant source of transportation-related noise. Sound pressure levels for trains represent single event levels rather than continuous levels, as used for vehicles and aircraft-related noise. The reason for this is that there are relatively long intervals between each train, thus they are viewed as "point" sources. Vehicles and aircraft have shorter intervals between occurrences and are viewed as a "line" source. According to the estimates made by Caltrans, a train engine generates about 90 dBA at 150 feet.

Construction related noise is another source of noise. This group includes such items as: diesel engines, electric motors, air compressors, pile drivers, and other construction-related equipment. These sources are annoying because of the high sound pressure levels and pulsating nature of the noise they typically generate.

Site and social related sources, the third major group, cover a wide variety of noise sources including the following: heating and air-conditioning equipment, industrial equipment, power equipment, amusement objects, hi-fi and radios, children at play, animal noise, and vocal noise. These sources of noise can be the most difficult to control for they can occur anywhere and at anytime.

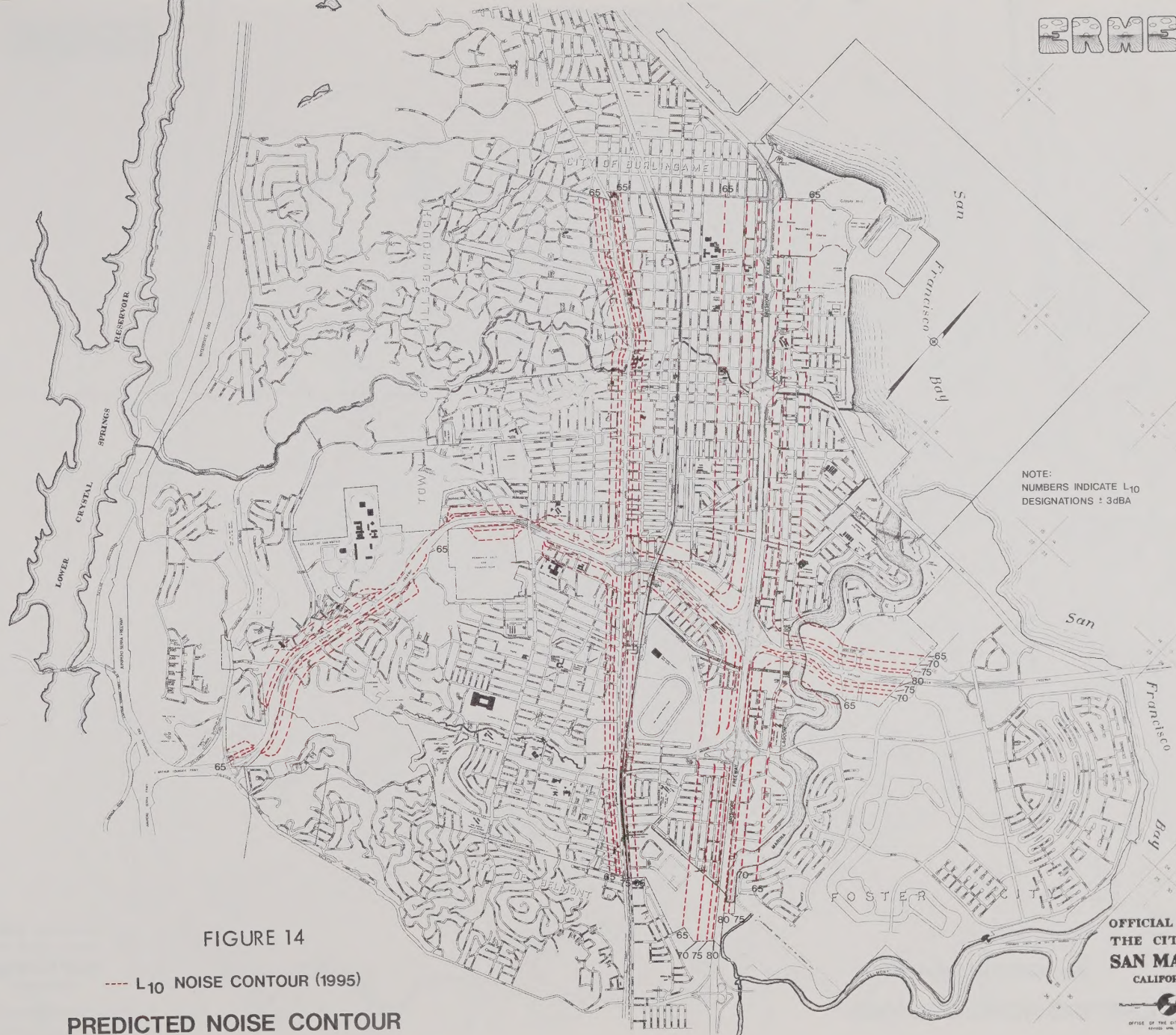
c. Noise control standards

There are two basic forms of noise control standards:
1) standards which relate land uses to noise levels;



— L₁₀ NOISE CONTOUR (1974)
— CNEL NOISE CONTOUR

EXISTING NOISE CONTOUR



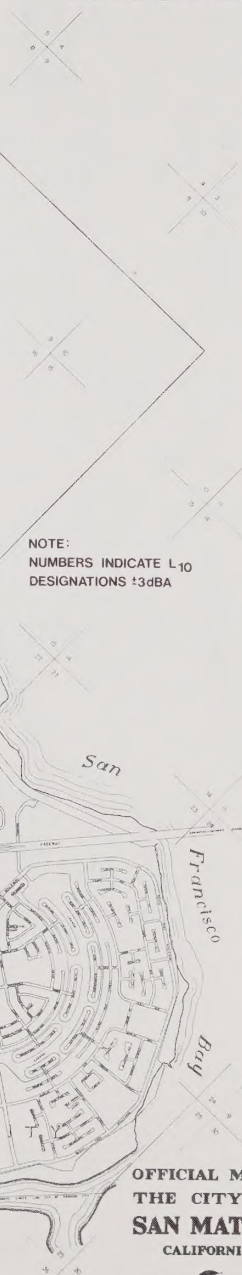
NOTE:
NUMBERS INDICATE L₁₀
DESIGNATIONS : 3dBA

FIGURE 14

--- L₁₀ NOISE CONTOUR (1995)

PREDICTED NOISE CONTOUR

OFFICIAL MAP
THE CITY OF
SAN MATEO
CALIFORNIA



— L₁₀ NOISE CONTOUR (1974)

OFFICE OF THE CITY ENGINEER
APR 1900

and 2) standards which apply to noise sources. These two forms of noise control are compatible and may be used simultaneously.

The Federal Government has issued land use standards for various noise levels. One set of standards is found in the Policy and Procedures Memorandum (PPM 90-2) of the Federal Highway Administration. These standards are applicable to all land uses in San Mateo, except those uses significantly affected by aircraft noise. A table of these standards can be found in the Technical Supplement.

The Federal Government has also issued noise control goals in Report 117 of the National Cooperative Highway Research Program (NCHRP). These noise levels are intended to be desirable goals for noise control. In some situations, it may be technically difficult and economically unfeasible to attain these goals. These goals can also be found in the Technical Supplement.

While the Federal standards and goals apply to most noise situations, they do not include land uses exposed to aircraft noise. Under California Law, the County's Airport Land Use Commission (ALUC) is responsible for developing a land use plan for areas directly affected by an airport. In the City of San Mateo, two areas are affected by airports: the Coyote Point area is affected by San Francisco Airport; and a portion of the Los Prados planning area is affected by the San Carlos Airport (see Figure 13). ALUC has established land use recommendations for both areas. Such recommendations can be found in the Technical Supplement.

Noise control standards have also been developed to

control specific noise sources, rather than land uses. Several urban communities similar to San Mateo have established limits for various types of noise sources according to location. The Cities of Burbank, Inglewood, and Alhambra, California have a general noise limit of 5 dBA above ambient at the property line. The City of Palo Alto, has slightly less stringent standards. There the residential limit is 6 dBA above ambient and the public property noise limit is 15 dBA above the ambient at 25 feet.

Daytime noise limits are usually less restrictive than nighttime noise limits because noise produced during the day is generally less irritating. Also, consideration is sometimes given to construction and train noise. These limits are less restrictive because the sources are short term or because substantial reductions in the noise would be extremely difficult.

Noise problem areas

By applying the land use noise standards to the existing land uses, various noise problem areas become evident. The majority of the problems occur within residential areas. In these areas, the noise level exceeds 70 dBA under L10 designation. Other problem areas occur with other types of developed land exposed to noise levels which exceed 75 dBA under L10 designation. The following potential noise problem areas are identified within the City:

1. Bayshore Freeway - Problem areas exist along the entire length of the freeway. Residential

problem areas extend to approximately 400 feet (1 1/2 blocks) of the freeway.

The standard for other developed land is also exceeded in many places.

2. El Camino Real - Problem areas exist along those portions north of J. Arthur Younger Freeway to the City Limit. Residential problem areas extend approximately 180 feet from the street.

3. Delaware Street - Problem areas exist in various portions along the entire length of the street. Residential problem areas extend approximately 100 feet from the street.

4. Alameda de las Pulgas - Problem areas exist along the entire length of the street. Residential problem areas extend approximately 80 feet from the street.

5. Other problem areas - Several other problem areas have been identified along Hillsdale Boulevard, J. Arthur Younger Freeway, Peninsula Avenue, East Third Avenue, and San Mateo Drive. Again, residential problem areas are the most numerous.

These areas were identified from estimates made by Caltrans and the City's Engineering staff. While these estimates indicate general noise levels, individual readings are necessary to determine precise noise exposure levels at specific site locations.

Specific noise sources cannot be as readily identified as noise problem areas because they occur at random places

and at random times. The limits for noise sources were designed to control specific noise violators. The difficulty comes in enforcing the noise limits. In many cases, the noise problem lasts only for a few minutes or even seconds. Another difficulty is the lack of training in the use of sound level meters to take accurate noise level readings.

D. Possible mitigation measures

There are three basic ways to control noise: 1) lessen the noise at its source; 2) lessen the noise along its path, and 3) lessen the noise at the receiver.

The ideal way to control noise is to lessen it at its source. This can be done by changing the design of the source, adding a muffler or other noise attenuating device, or surrounding the source in a noise reducing enclosure. The City can establish standards for most sources within the City. Several major sources, however, have standards which are not controlled by the City; they are the following: noise standard for registered vehicles are set by the California Vehicle Code; train standards are set by the Environmental Protection Agency (EPA) and the Federal Department of Transportation; and aircraft standards are set by the Federal Aviation Administration and the EPA.

Noise standards can be implemented in a Noise Control Ordinance, the Zoning Code, or the nuisance section of the Municipal Code. A Noise Control Ordinance would set standards for noise

generation in various areas of the City. To use the Zoning Code, noise generation standards would be established for each different zone in the Zoning Code. To use the nuisance section of the Municipal Code, noise generation standards would be added to the existing nuisance section.

Although the City cannot establish standards for registered vehicles, it can increase enforcement of California Vehicle Code regulations concerning excessive vehicle noise.

Another way of controlling noise is to lessen it along its path. This can be accomplished by either using a noise barrier or by increasing the distance of the path. Noise barriers can be both attractive and effective ways of lessening noise along its path. There are numerous types of construction and materials available for noise barriers, such as a combination block wall and earth berm. Such barriers have been found to reduce the noise by as much as 15 decibels.

The establishment of Noise Impact Districts would be helpful in informing prospective applicants of potential high noise areas and the amounts of noise reduction necessary for particular zones. In order to develop a site in a Noise Impact District, accurate noise information from the specific site and noise attenuation measures compatible with adjacent land uses would be required.

The third way of controlling noise is to lessen it at the receiver. This can be done by insulating structures and by site planning. The City can implement these measures by using the Zoning Code and/or Building Code. The Zoning Code would incorporate interior noise standards for different zones. The Building Code would include sound

transmission standards for materials used in construction.

3. GENERAL SAFETY

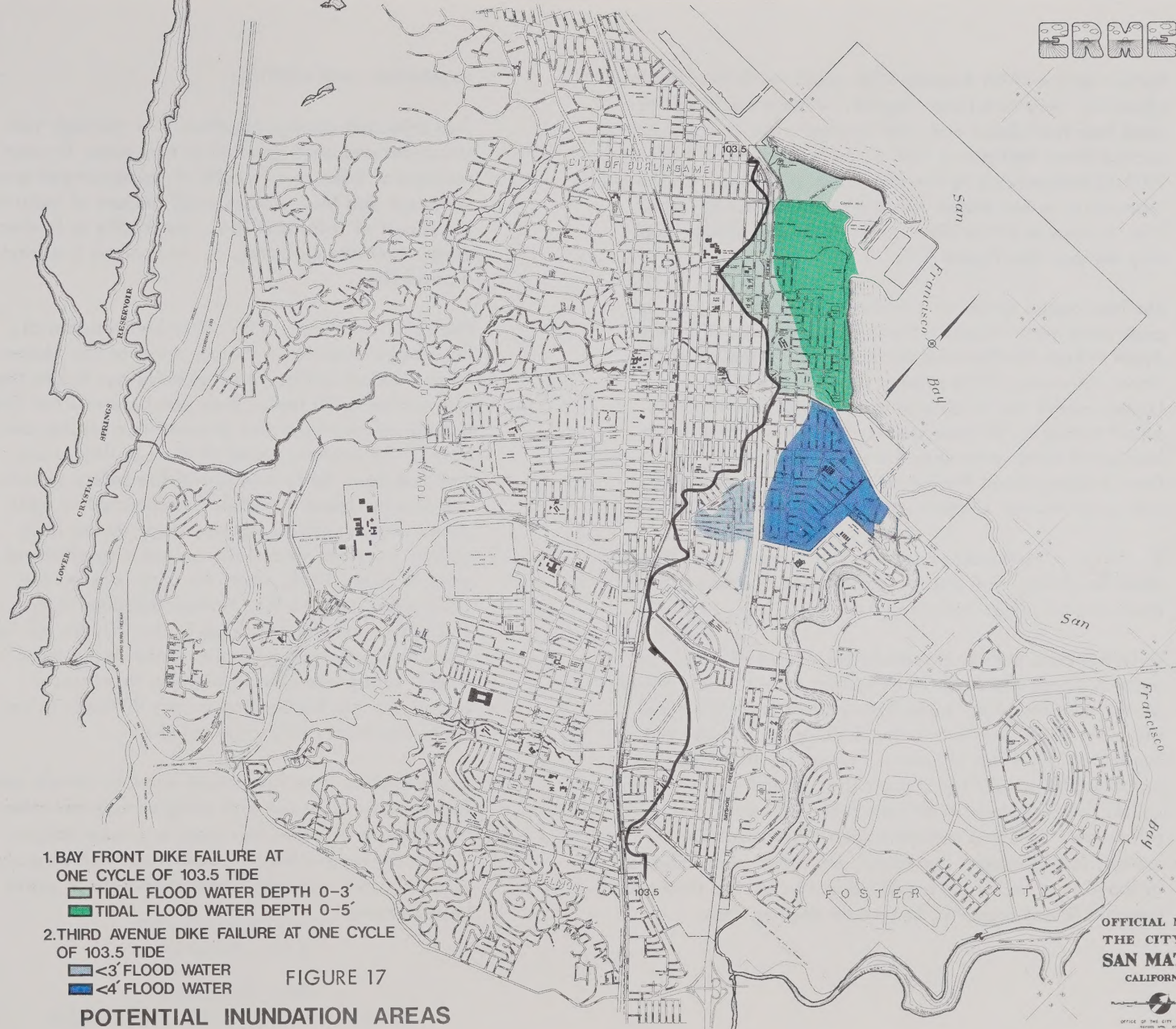
A. Background

This aspect of the ERME deals with hazards that are not seismically related. They are the following: inundation from dike failure and 100 year storm; fires; non-seismically induced geologic hazards, such as slope stability (landsliding) and expansive soils; and other disasters as addressed in the City's Contingency Emergency Program.

B. Problems

1. Inundation. Principle sources of potential inundation are the Bay front dike; the Third Avenue dike; and Marina Lagoon during a 100 year storm.

Local high tide reaches a level as high as 103.5 feet. The general area between the Bay front dike and Bayshore Freeway is at or above elevation 99 feet, with some few exceptions. Therefore, it appears that if the dike were to fail, up to five feet of water above curb may be expected in portions of the area behind the dike during a high tide of 103.5 feet (see Figure 17). However, this would occur during one cycle of tide. It is possible that during a second cycle of tide at 103.5 feet the area of inundation could be extended but not beyond the 103.5 foot contour which is the maximum possible inundation elevation.



- 1. BAY FRONT DIKE FAILURE AT ONE CYCLE OF 103.5 TIDE
 - TIDAL FLOOD WATER DEPTH 0-3'
 - TIDAL FLOOD WATER DEPTH 0-5'
- 2. THIRD AVENUE DIKE FAILURE AT ONE CYCLE OF 103.5 TIDE
 - <3' FLOOD WATER
 - <4' FLOOD WATER

FIGURE 17

POTENTIAL INUNDATION AREAS

Failure of the Third Avenue dike would result in a similar situation, only to a lesser degree. Waters would not exceed four feet above curb and in some areas it would not exceed three feet above curb during one cycle of high tide (103.5) and only up to the 103.5 foot elevation. Although inundation in San Mateo is not a severe threat to human life, failure of either dike would cause significant property damage (see Figure 17).

Marina Lagoon serves as a retention reservoir to pick up peak storm water runoff. During rainy seasons the water depth is kept low in order to accommodate the added inflow. However, at its present pumping capacity, the Lagoon would not be able to accommodate storm water runoff during a 100-year storm. What would result is a backup of storm water into the streets leaving up to 1.5 feet of water above the top of the curb. In many cases this is not enough to top foundations (see Figure 18).

2. Fires. Fire hazards comprise two types: 1) wildfire - those involving trees and vegetation and 2) urban - those involving buildings and structures.

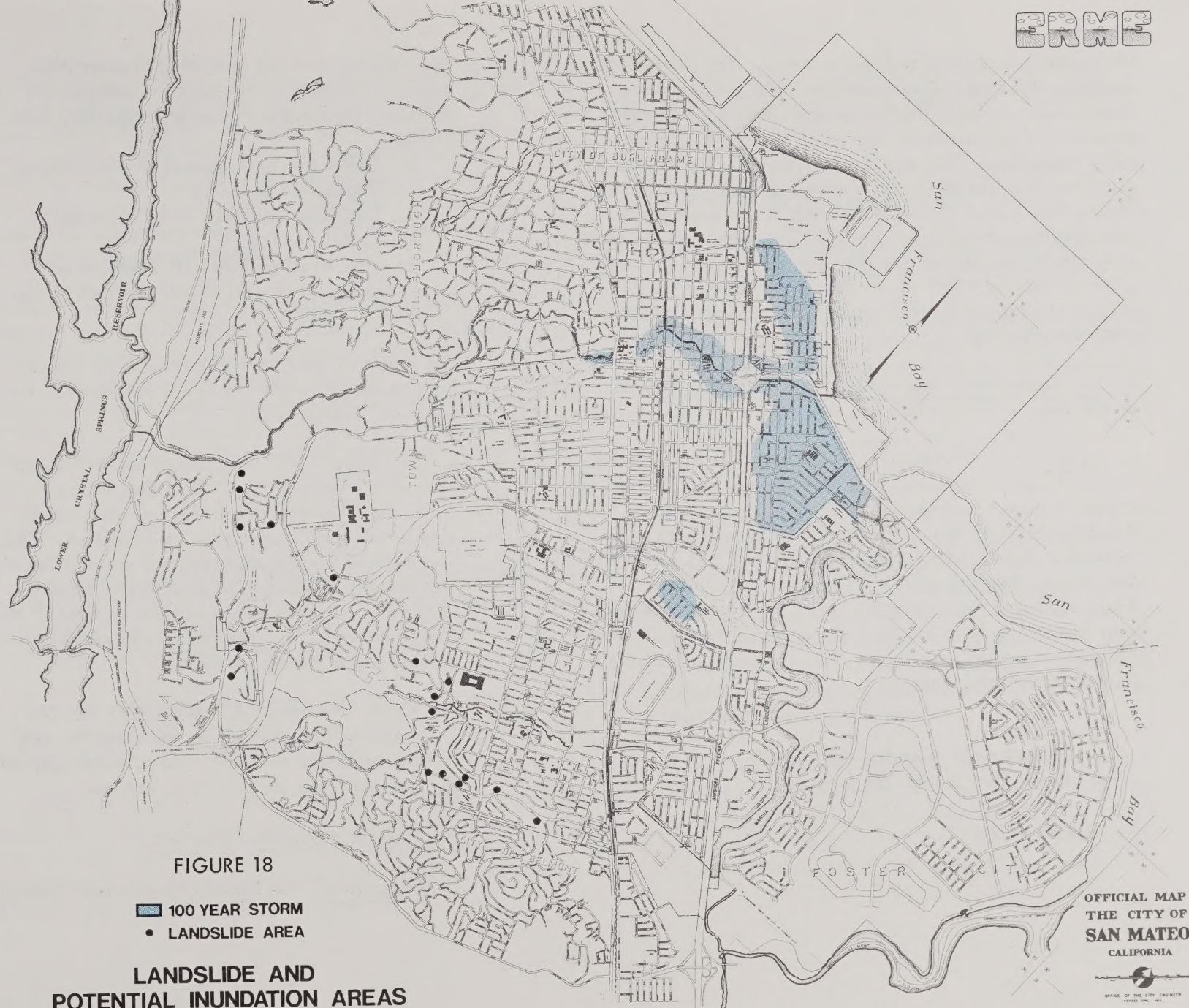
Wildfires pose certain threats to San Mateo although not equal to those which occur in southern California. Many of the open areas that have been part of San Mateo and the surrounding region are now developed, thereby reducing the potential for wildfires. However, this does not preclude the possibility of grass fires in such areas as the Laurel Creek watershed or deep lots scattered throughout the western hills and Hillsdale area, the Parrott Drive area by Hillsborough, Sugarloaf, and other areas adjacent to the City. Such fires would not pose a severe threat to human life and property, but would destroy trees,

vegetation, and wildlife.

Two principal sources of urban fires are high-rise structures and conflagration as may occur in some residential areas and in parts of the downtown area. Although San Mateo has a small amount of industry, the threat of industrial fires, especially in lumber yards, fuel storage yards, or warehouses is always a possibility.

High rise structures, both office and residential, have been locating in various areas of San Mateo. High rises are defined here as buildings higher than four stories or 50 feet. They can be a critical fire hazard unless proper fire preventive measures are taken. Fortunately, most of these buildings are new and have fairly substantial fire safety systems and fire retardent materials incorporated in their construction. Unfortunately, many do not have sprinkler systems since this was not a requirement prior to May, 1974, when the City adopted the 1973 amendment to the Uniform Building Code. The older high rise buildings in the City do not have fire safety systems equivalent to the newer structures. Fire prevention in highrise structures is essential since firefighting is very difficult in the upper stories of a high-rise structure.

Conflagration type fires could erupt in certain areas. Clusters of residences with shingle roofs and some buildings in the downtown area are major targets. Given the right climatic conditions, such as gusty winds and hot weather, numerous buildings could be destroyed.



Most everyone in the Bay Area is aware of the destruction caused by the fire that followed the 1906 San Francisco Earthquake. In fact, the fire caused most of the property damage as ruptured water lines made fire fighting practically impossible. This threat exists today in San Mateo as pipelines could be disjointed during a severe tremor. Should the Crystal Springs Dam break or the three water mains feeding the City fail, or the City water tanks become inoperable, San Mateo would be without water. However, given a pipeline break within the City, water service can still be maintained by sealing off ruptured lines and using alternate pipelines.

3. Non-seismically induced geologic hazards. Hazards of this type include landsliding and expansive soils.

a. Landsliding. Historically, San Mateo has experienced few landslides. However, as a development extends into steeper more susceptible areas, special consideration should be taken or the number and severity of slides will increase. The Hillsdale Boulevard approach to College of San Mateo, Kingridge Drive, 42nd Avenue, DeAnza Boulevard, and Timberlane Way are some areas where recent landsliding has cost the City and property owners over 1/2 million dollars (see Figure 18). Landsliding is directly related to the following:

- i. Ground water
 - a. Surface water entering the ground
 - b. Ground water near the surface

ii. Slope steepness

iii. Bedrock and soil strength characteristics. Proper investigative and design techniques are available for the prevention of landslides, these include:

- a. Collection and removal of excess water
- b. Vegetative covering
- c. Design accommodation of expected horizontal loading
- d. Site investigations with emphasis on ground water as well as soil and rock strength characteristics.

The repair of existing or future slides is frequently not economical while preventative measures are relatively inexpensive.

b. Expansive soils. This hazard occurs because clay soils change volume with water content. That is, as the clay absorbs water it expands, as the clay dries the soil contracts. Most expansive soils are found in the Bay mud area and some in the alluvial areas of the City. It is no longer a major problem as mitigatory measures are in effect. However, numerous older structures have cracked foundations due to expansive soils.

4. Other disasters. As addressed in the City's Contingency Emergency Program, these include civil disturbances -- bomb threats, bombings, sniper fire and riots; air pollution; and war.

C. Possible alternative solutions

1. Inundation. The Federal Government through

the Department of Housing and Urban Development (HUD) offers a National Flood Insurance Program to cities with areas prone to flooding. Authority for the provision of flood insurance is the Flood Disaster Protection Act of 1973. In order to qualify for such insurance, the City must devise land use and zoning regulations regarding such areas. Noncompliance would mean loss of Federal disaster relief during severe flooding.

The City has the choice of accepting the flood prone area designation or of alleviating the flooding situation through various mitigatory measures. The ramifications of a flood prone area designation are mainly twofold: 1) homeowners in the area would have to purchase flood insurance or they would have difficulty in securing a loan to sell or improve their home, and 2) a problem of the continuing lack of safety from flooding. The deadline is July 1, 1975, at which time the City must agree to comply with one of the two alternatives.

2. Fire prevention program. Fires in San Mateo are not a frequent occurrence, fortunately. However, this does not preclude the need for improvements to reduce fire hazards. Such improvements might include the following:

a. Develop a comprehensive water lifeline system capable of meeting events of catastrophic proportions. This would include reservoirs and Bay water access.

b. Continue to vigilantly adopt and apply changes in the Uniform Building Code concerning fire prevention measures for high-rise structures. This would also include applying retroactively such amendments to older structures if feasible and effective. Such measures may include

intercom systems, compartmentation, detectors, smoke control, fire alarms, elevator control, emergency power, and sprinklers.

c. Utilize design measures in high-rises that would reduce the upward spreading of flames.

d. Utilize fire retardant materials on roofs of residential structures and other low rise buildings.

e. Encourage the adoption and continuous improvement of the Automatic Aid program among the cities of San Mateo, Belmont, Burlingame, Hillsborough, and Foster City.

f. Seek additional sources of water for fire-fighting purposes.

3. Geologic hazards prevention program. In reducing the landslides and expansive soil problems, preventive measures are most effective. Landsliding will continue to be a problem as long as development occurs in the southwestern region of the City; the area most susceptible to landslides. Careful consideration and the identification of potential landslide areas and of subsurface conditions is essential in alleviating this hazard.

The problems associated with expansive soils can be solved by placing foundations two to three feet deep or on a non-expansive fill, thereby creating stability in water content of clayey soils. Existing City standards have effectively abated this problem.

The solutions recommended for seismically related geologic hazards can also be applied to these non-seismically related geologic hazards. They are well covered in the section on seismic safety.

4. Contingency/emergency program. The City of San Mateo is developing contingency plans for the various hazards identified in this section and in others dealing with earthquakes and flooding. They are part of the Civil Defense Disaster Plan. The plans are general guidelines for different City departments, officials, and employees to follow in case of a disaster. The consolidation of police and fire communications initially and public works sometime thereafter will be advantageous to the Contingency Emergency Program.

4. ENERGY CONSERVATION

A. Background

In 1973 the American people were confronted with a situation that severely affected their life styles - the energy crisis. The shortage of gasoline to operate automobiles, the shortage of fuels and other energy to heat homes and operate business and industry resulted in long waiting lines at gas stations and higher prices for energy-producing fuels.

A very significant outcome of the crisis was that it created an awareness in people that the nation's resources are not limitless and that there is a definite need for energy conservation measures to be taken by all sectors of society.

Because the energy problem is a nationwide concern, one

city's energy conservation measures will have a limited affect. However, they could serve as an incentive for other cities to follow. This section will deal with only those energy saving programs that San Mateo can put into effect; e.g., land use and physical development, transportation, and community management. The following section briefly addresses each.

B. Energy conservation measures

Energy conservation measures generally fall in three categories - land use and physical development, transportation, and community management. The measures within this section are suggestions and will require further analysis if they are to be placed into effect.

1. Land use and physical development. Measures that can be taken under this category include evaluation of present land use and housing policies regarding population density and building intensity for the affect on energy usage. Higher population densities and building intensities (with compensating comparable open space) use less energy than lower densities on scattered sites. A compatible mixture of uses to reduce unnecessary travel, such as residential/commercial complexes in high density areas can be an effective energy saving measure also. Locating new development or redevelopment in a manner that would result in clusters of commercial, office, residential, and recreational activity areas can also be feasibly achieved.

Recreation areas and open space reserves should be provided on close-in sites and on a generous basis. This will provide the necessary open areas to accommodate the people living in the higher densities. It will also tend to reduce the energy spent traveling to remote park areas.

The physical placing of buildings on their site is important so as to take advantage of natural energy sources. Locating rooms to use the sun and shade at the most appropriate time of day can reduce the need for heating and cooling systems.

2. Transportation. The automobile is a major user of energy. Therefore, reducing auto usage by providing alternate transportation, such as bicycle routes and public transportation, also reduces energy consumption.

Most development is geared around the usage of the automobile. Future projects could make provisions for different transportation modes. These would include bicycle paths and pedestrian ways. In conjunction with this, providing a link among the different areas of the City would result in a comprehensive multi-modal transportation system.

For intercity commuter travel, encouraging carpooling when use of the automobile is essential can also reduce energy consumption.

3. Community management. This program comprises two categories:

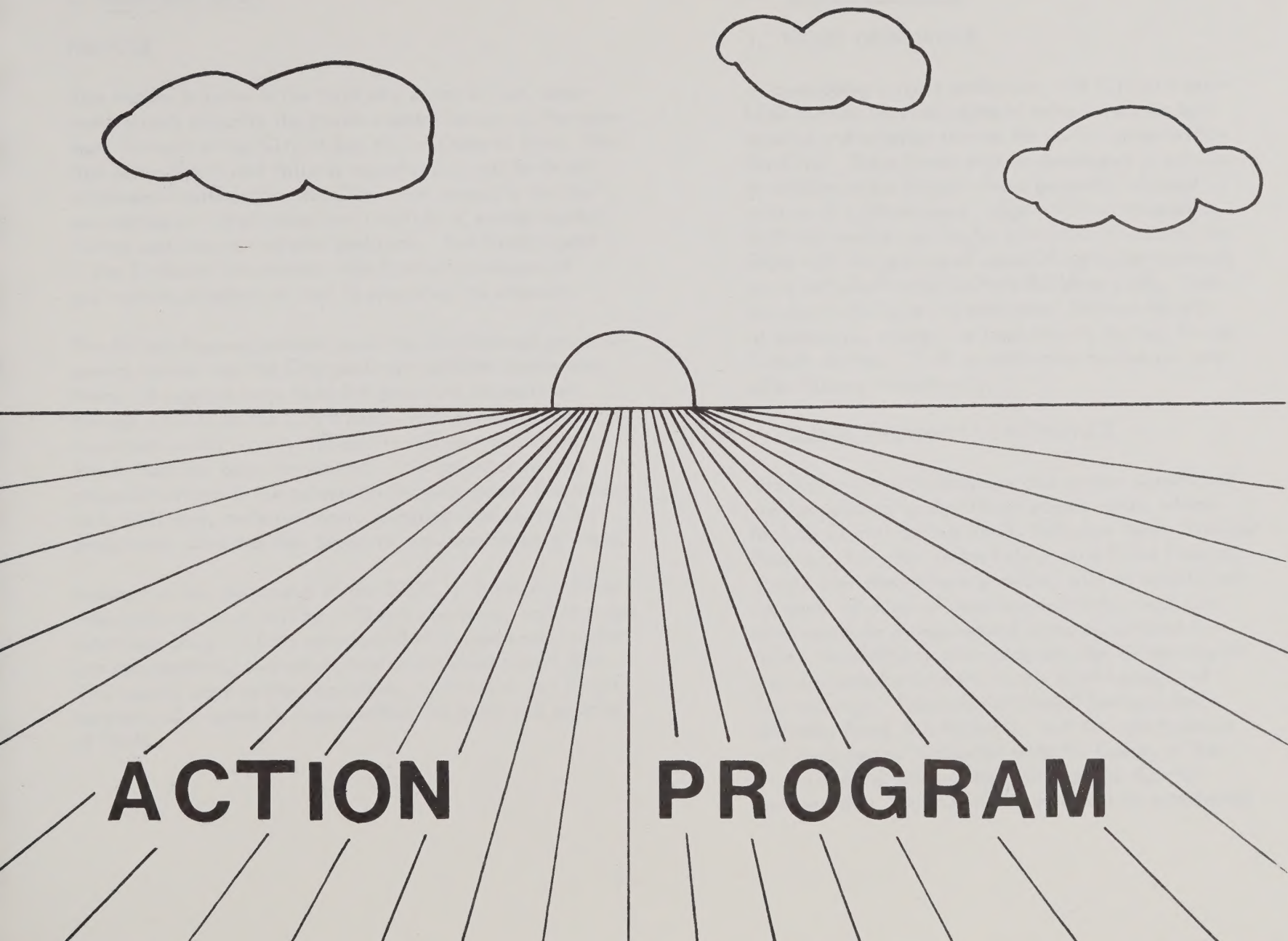
First, conservation approaches in public facilities include lowering temperatures for winter heating and raising them for summer cooling; reducing or combining field trips;

purchasing compact autos when older larger vehicles are fully depreciated; daytime meetings; converting street lights to mercury vapor; reducing office lighting; and the like.

Second, public conservation of energy through city actions. This includes revision to building codes and standards such as requiring more insulation and better air conditioning and heating systems in construction. In addition to this, public education programs to make people aware of energy loss where they live and work can help reduce energy consumption.

C. Conclusion

Most of the above measures appear to be long range except for such immediate actions as carpooling, lowering temperatures, reducing vehicle trip, or preparing a parking management plan. When dealing with long range concerns it is difficult to predict what the future will bring, especially when changes in technology far exceeds changes in planning concepts. Being aware that such conditions exist and being prepared in advance to deal with them is the most that can be expected at this time until state and national policies regarding the above measures are more precisely defined.



ACTION

PROGRAM

I. INTRODUCTION

PURPOSE

This Action Program is the third of a series of four documents which comprise the Environmental Resources Management Element of the City of San Mateo General Plan. The first is the Goals and Policies report which sets forth environmental policies for the City. The second is the Resources Report which describes a variety of environmental factors and discusses related problems. The fourth report is the Technical Supplement which details background and reference materials used in preparing the element.

The Action Program is based upon the discussion of environmental factors and the City goals and policies concerning them. It suggests ways in which goals can be realized through actions on the City's part. In preparing the actions described in this report, the ability and practicality to effect them has been considered. This report organizes proposed actions in six categories for convenient discussion: code additions, code revisions, planning studies, review procedures, direct action programs, and contingency plans.

Among the four documents of the ERME, it is expected that this action program will be reviewed, updated, and changed most frequently. As the recommended programs and studies are implemented, this report must acknowledge such facts. This report, more so than any other, will reflect the City's success and progress in implementing the goals and policies of ERME.

II. CODE ADDITIONS

1. NOISE ORDINANCE

In developing a noise ordinance, the City will establish the maximum acceptable noise levels for both interior and exterior sources for various areas within the City. These levels will be developed in relation to ambient noise levels--those generally characteristic of a given area. Maps will be prepared to indicate areas of particular concern. Presently, the State is in the process of establishing noise standards to be included in the Uniform Building Code. Such standards will have the additional indirect benefit of conserving energy, as insulation is the key factor in both matters. Such an ordinance can be put into effect almost immediately.

2. SCENIC HIGHWAYS ORDINANCE

The ordinance will designate and protect significant and/or potentially significant scenic roads, which include Crystal Springs Road, Polhemus Road, Younger Freeway, Alameda de las Pulgas, and Third Avenue. Scenic corridors, where possible, will be established for each. Review of development within each corridor would be a requirement based on adopted criteria. In addition, other programs can be developed that are aimed at preserving the scenic quality of the roadways. Programs for Crystal Springs Road, Polhemus Road, the Alameda, and Younger Freeway will be prepared in concert with the County of San Mateo and the Town of Hillsborough (for Crystal Springs Road). Such an ordinance will be established

within the parameters of the requirements of the County. Project review on an ad hoc basis will be conducted until the streets are officially designated and an ordinance enacted.

3. HISTORICAL PRESERVATION ORDINANCE

Identify through official register historically significant structures, sites, and areas and allow for their preservation. Public hearings will be conducted for the removal and alteration of historic structures and sites to determine the feasibility of their preservation. Procedures will be developed through the ordinance. In areas of historical prominence, historical districts will be established. Until such time as the ordinance is enacted, project review on an ad hoc basis will be conducted. As a tribute to the nation's centennial year celebration, San Mateo could enact the ordinance in the near future; preferably by 1976.

4. NATURAL VEGETATION AND WILDLIFE ORDINANCE

Procedures will be developed in the ordinance to require certain preservation measures to be observed in developments. Areas of significant vegetation and wildlife will be identified and criteria established to define significant vegetation and wildlife. Such an ordinance will also affect air and water quality, the natural topography, scenic highways, urban form, and provide a degree of safety. Like the historic preservation ordinance, the 1976 centennial celebration is a time consideration for ordinance enactment. Ad hoc review will suffice until enactment.

5. WATER ACCESS ORDINANCE

The ordinance will provide for the protection of water quality and public access to water courses. Waterways will be designated as well as impact corridors on either side of channels or creekbeds (except where culverted). Treatment of land within the impact area to recognize the water features will be a requirement. This can be accomplished by either a linear park development or other design. Configuration of easement may vary depending on evaluation by reviewing bodies. Water, wildlife, open space, conservation, and general safety are major concerns. Until the enactment of the ordinance, project review on an ad hoc basis will occur.

6. DANGEROUS BUILDING ORDINANCE

Safety criteria will be established for various types of structures based on use and life expectancy. Existing buildings will have to meet such safety criteria. The ordinance will provide protection against personal injury and property damage by correcting unsafe building conditions. The ordinance will affect such factors as seismic safety and historical/cultural concerns. The ordinance can be adopted immediately while the actual inspection program will take two to five years to complete.

7. PARAPET ORDINANCE

The ordinance comprises a two-step approach:

1) the ordinance, which will require reinforcement or removal of dangerous parapets and other appendages of structures, and 2) the establishing of criteria to determine the safety of parapets and appendages. To enforce the ordinance, an inspection program will have to be implemented. The program will be carried out concurrently with the dangerous building program and compliance with the ordinance may mean reinforcement or removal of dangerous parapets and appendages. Although the program ordinance will protect the public against personal injury, it can affect the historical and architectural significance of older structures. In order for the program to be effective, the ordinance must be enacted; preferably as soon as possible.

III. CODE REVISIONS

1. ZONING CODE

Revisions to the zoning code will involve the examination and revision of open space requirements in the R3 district; the establishment of a design manual for development in the R5 district; the development of design criteria for planned developments and the re-examination and revision as necessary of buffer and transition criteria in various other zones. The types of projects produced by the R3 zone will be evaluated, a 300 sq. ft. area of open space will be a requirement for all units, and the floor area ratio special permit feature will be eliminated. As specified in the zoning code, a design manual may be developed for the R5 zone which will take into account a review of the effectiveness of bonus features. The effectiveness of the regulations for the executive zone as well as buffers

and transition will be studied as part of the general height, bulk, and open space study. To add strength to the planned development procedure, more precise design guidelines will be developed. Such a program will greatly affect open space within the City. In order for the revisions to be effective, the code amendments must be adopted. The codes can be amended immediately to intermediately.

2. IN-LIEU PARKING PROGRAM

The program has been developed but needs further study. After study, an ordinance and/or resolution must be adopted to establish the program. The program will indirectly affect air quality and energy conservation. Until the ordinance and resolution are adopted, preferably as soon as possible, project review will be conducted on an ad hoc basis.

3. UNIFORM BUILDING CODE AMENDMENTS

The International Conference of Building Officials, sponsors of the Uniform Building Code (UBC), frequently propose changes to the UBC. Because these changes affect better quality and safety in construction, their prompt consideration and adoption is preferred. Their greatest areas of effectiveness will be seismic safety, general safety, noise, and energy conservation. Updating is an ongoing process and the changes must be adopted to be effective.

4. SITE DEVELOPMENT CODE AMENDMENT

The amendment will develop area and slope criteria and procedures in the Site Development Code, generally for slopes greater than 25%. The amendment will limit the grading of slopes for safety and site protection reasons. Such an amendment will affect many areas: open space, vegetation, water, topography, scenic highways, seismic safety, and general safety. Project review will be handled on an ad hoc basis where the code amendment is adopted. The timing of it is intermediate.

IV. PLANNING STUDIES

1. WILDLIFE PRESERVE

Because such few areas of wildlife exist within the City, the feasibility of their preservation will be explored. While some areas will be considered individually, other areas may be included in other studies, such as the north end of Marina Lagoon in the Shoreline Plan. The study will affect, to differing degrees, open space, vegetation, wildlife, seismic safety, and general safety. Certain conclusions must be reached before this consideration becomes meaningful. The timing on this study is intermediate.

2. UNSTABLE SOILS STUDY

Because insufficient information exists concerning the stability of soils and their likely reaction to seismic activity, better quality data must be obtained and analyzed before site-specific conclusions can be drawn. The study will establish a framework and library for soils reports prepared for projects so that they may become part of a city-

wide soils information reference. When necessary, soils investigation will be performed to confirm conclusions about potentially hazardous conditions. The areas directly affected will be seismic safety, general safety, and topography and indirectly, vegetation and open space. Detailed knowledge of soils stability will reduce hazards and costs of repair in affected areas. Such a study will be ongoing.

3. MARINA LAGOON PARK PLANNING

Because Marina Lagoon is a significant recreation facility, wildlife area, and public works installation, it has the potential of being a multi-purpose open space area. State water and conservation funds may be obtainable for improvements and expansion of public ownership of lands adjacent to Marina Lagoon. Advanced planning and scheduling of capital expenditures can put San Mateo in a good position to obtain such funds. Such a project will greatly affect vegetation, water, wildlife, open space, and safety. The study will be intermediate and ongoing; however, return on time invested is uncertain.

4. CRYSTAL SPRINGS DAM STUDY

While the dam poses potential dangers to downstream areas, a study concerning its safety has not been conducted. An in-depth analysis of this dam, as well as the San Andreas Dam, will be requested of responsible agencies. These include the San Francisco Water Department and the Division of

Dam Safety; these agencies should be requested to give priority to the two dams. Detailed knowledge of the extent of danger from the two dams will permit improved contingency planning and other actions. The two areas most affected are seismic safety and general safety. Its immediate attention is preferred.

5. GENERAL PLAN REVIEW

The 1974-1975 annual review of the General Plan will be the occasion for review of the implications and compatibility of the ERME with other elements, especially the Housing and Land Use Element and the Parks and Recreation Element. Review of the other elements of the General Plan will be conducted in light of the findings of ERME. Unless an attempt is made to have other elements reflect the ERME, its implementation may be delayed. The review is an ongoing process.

6. TREE POLICY STUDY

There is considerable concern over landscaping and vegetation; however, no comprehensive policy exists. Since the City recognizes the value of both natural vegetation and trees planted by man, a long-range tree planting program can be implemented. Such a program will supplement the newly established Add-a-Tree program. The program will include priorities in terms of deficient areas of the City, treatment of entire streets, continuing allocation of funds, and make clear responsibilities of private developers and conditions which will be required of projects. The policy will have far-reaching implications affecting such areas as vegetation, noise, urban form, scenic

highways, open space, and conservation. It will be ongoing as update may be necessary.

7. WATERWAYS POLICY STUDY

The City's waterways can be maintained for both water conveyance and other purposes. An evaluation of water courses with an eye toward multiple use and keeping streambeds natural can produce recreational and scenic resources which the City can continually take advantage of in the future. The policy will articulate the City's long-term view of the treatment of waterways and drainage channels. Without such a policy, waterways will continue to be neglected and their recreational and scenic potential may never be realized. The areas of ERME affected by the policy are water, vegetation, wildlife, conservation, and open space, directly and general safety, indirectly. It is an ongoing process requiring periodic updating.

8. RIGHT-OF-WAY POLICY STUDY

The policy will recognize that street surface can be used for many purposes in addition to moving cars. In establishing the circulation or transportation element for the City, thought will be given to circulation improvements together with the desirability of street widening and damaging consequences, street enclosure, bicycle paths, and the like. The policy will affect vegetation, scenic highways, urban form, and open space.

The policy may require periodic updating.

9. REDEVELOPMENT POLICY STUDY

Many older areas of town have been uniquely developed and contain fully mature trees. In addition, existing public services may have been installed many years ago. However, redevelopment may remove and place new projects among existing development. Furthermore, redevelopment takes place one small development at a time, making it difficult to assess any cumulative impacts. The policy will allow redevelopment in built-up areas while recognizing general area character, existing mature trees, and the limitation of public services and facilities. Redevelopment criteria will be established regarding transition, buffer, building type, parking, and vegetation and will make it easier to evaluate project/neighborhood compatibility. The areas of ERME affected will be vegetation, urban form, historic/cultural factors, and noise as well as open space and conservation. Timing will be immediate to intermediate.

V REVIEW PROCEDURES

1. CITY-WIDE/AREA-WIDE ENVIRONMENTAL IMPACT REPORTS

EIRs are useful for detailing the generalities of ERME. However, they do not allow for an analysis of the cumulative impacts of several or many development projects. This is only possible on an area-wide basis. This procedure will establish a library of project EIRs for ready reference for neighborhoods generally. Neighborhoods or groups of

neighborhoods will be delineated as suitable areas for environmental assessment. Use confirmation from ERME and other sources to outline studies of impacts of successive projects. This approach will cover areas in which current EIRs are deficient. It may also lessen the need to produce EIRs for individual projects, or at least only an addenda to area-wide reports. It will be ongoing.

2. FINDINGS OF CONSISTENCY

It is important that cumulative, overtime, projects and City actions follow the General Plan goals, albeit it is not necessary that individual projects be always consistent with the elements. However, reviewing bodies, especially BOZA, can make findings on individual projects to see if they are consistent with, neutral to, or in conflict with the General Plan and specific elements. This will allow an evaluation of how successfully General Plan policies are being implemented. It is an ongoing process.

3. PUBLIC EDUCATION

The public will be continually made known of the City's policies on a variety of subjects and supplied information conveniently.

VI DIRECT ACTION PROGRAMS

1. PARK LAND ACQUISITION

This program involves the acquisition and develop-

ment of park areas with emphasis on sites significant from an ERME standpoint, such as Marina Lagoon Park, San Mateo Creek linear park, and the like. The program will effect the goals of the Parks and Recreation Element and those of ERME. Directly affected are open space, water, and vegetation, and to a lesser degree, topography and general safety. Acquisition will be an ongoing process.

2. SEWAGE TREATMENT PLANT AND WASTEWATER REUSE

Plans are underway for the expansion and upgrading of the wastewater treatment plant. Since the new wastewater facilities will be capable of providing first, second and third stage wastewater treatment, plans must be prepared for the reuse of water and areas which could benefit from this treated water, such as golf courses and other areas requiring irrigation. This program will affect vegetation, water, and wildlife. The timing will be immediate to intermediate.

3. DIKE RECONSTRUCTION

The stability of the Bay Front Dike has been analyzed and details of its conditions are being developed. In light of what will be an acceptable risk, dike reinforcement programs and funding programs must be developed and approved. The reconstruction of the dike will allow development in the affected areas, make insurance available, and protect life and property. The areas affected principally are housing and land use as well as seismic safety and general safety. The reconstruction of the dike can be completed by July, 1975, in accordance with the deadline established by the National Flood Insurance

Act of 1973, regarding flood prone area designation.

4. BUILDING INSPECTION PROGRAM

The program will be carried out in light of the findings and conclusions associated with the Dangerous Building Ordinance and the Parapet Ordinance. To implement the program will require the adoption of the above two ordinances, a program outline, and manpower to perform the inspections. The ordinances will not be effective unless enforced through the inspection program. The inspection will require 2-5 years to complete.

5. OPEN SPACE LAND DESIGNATION

The City has an established open space zone. However, no lands have been placed in this district. The program will designate as open space certain lands and areas showing significant open space features. Lands included will fall under any of the categories identified within the open space and conservation element. These may include parks, playgrounds, community centers, and facilities that are publicly owned as well as others that meet established requirements. To prove the district's effectiveness, lands must be placed under that category. The program affects a multitude of areas to varying degrees; they are open space, conservation, urban form, vegetation, wildlife, water, air, topography, historical/cultural, seismic safety, general safety, and noise. The timing is ongoing as lands will be continually

evaluated for their placement in the district.

VII CONTINGENCY PLANS

1. DETAILED CIVIL DISASTER PLANS

This will involve the maintenance of sufficiently detailed and operational plans to deal with likely emergency situations. To implement the plans, various annexes must be completed and time periods set for revisions and program training and exercise sessions. The program will be useful only if contingency plans are maintained up-to-date, periodic training sessions conducted, and supportive equipment made available. Their immediate completion is preferred.

2. PUBLIC EDUCATION

This will involve the compilation of a handbook of response to various emergency situations and the dissemination of information throughout the City to alert residents to steps they may take in coping with city-wide emergencies. This will be an ongoing process.

U.C. BERKELEY LIBRARIES



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